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STEEL

The Magazine of Metalworking and Metalproducing

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MESTA

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How to make belt ends disappear

B. F. Goodrich Plylock Splice makes belts endless, outlasts metal-fastened belts 3 to 1

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Behind the Scenes...

Sales Manual for "Salesmen"

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2. Talk Fast—Prevent the other person from detecting flaws in your argument, at least until after you have gone.

3. Interrupt—Interrupt at least once every other sentence. This breaks up the other's train of thought and puts him at a disadvantage.

4. Use Patter—Sprinkle your discourse with technical terms like "psychological impact," "labor-saving saturation," and "pitrofoc industrial correlation."

5. Be Aggressive—Ask meaningless questions and hint that the prospect is not on his toes. This puts the fellow on the defensive.

6. Criticize Your Prospect's Product—This makes him ripe for suggestion on how it can be improved with your line.

7. Blow Them Down—Relate in glowing detail how you landed a big contract yesterday. This impresses your prospect.

8. Be Right at Home—Ask if you can have the prospect's secretary put in several calls, keep him waiting while you make appointments and luncheon dates. Very impressive.

9. Never Cheer—If a good idea is advanced which you didn't happen to think of, attack it at once.

10. Keep Them Guessing—Don't bother to identify yourself or your product when calling on a prospect. Makes the prospect wrack his brain to place you. Puts him on the defensive.

11. Knock, Knock—Knock every competitor's product so that the prospect will feel like a fool for not using yours.

12. Your World Is a Stage—A knowledge of drama is helpful in applying just the right degree of contempt when a rival product is mentioned.

These rules are paraphrased from a booklet presented at a party by Harold Downing in Pittsburgh. The president of Walker & Downing Industrial Advertising agency guarantees that these rules, if followed consistently, will make you salesmen fair-haired boys with the big brass at the home office.

Pat on the Back

Geraldine, a cleaning woman in the building and our night editor, had an indignant note propped in our typewriter the other morning. "See here!" she wrote. "You're always complaining about getting copy for your column and here's something right under your nose. I found this buried in your 'To File' stuff. There's an item here."

By golly, she's right. She was referring to a letter we got from one M. Yoshida of Nagoya, Japan. He wants to translate some of our engineering articles for a publication called *Denkiseiko*. Before he made that request, though, he used the celebrated oriental tact to call STEEL "most useful and improving."

Robert S. Meighen in a letter to Weirton Steel Co.'s *Employees Bulletin* calls STEEL "the distinguished trade journal." He was writing in reference to our Fundamentals of Steelmaking article on tin plate contributed by A. E. Kadell, manager of Weirton's tin plate division.

That series is still running, by the way. Last week W. H. Worrilow's article began on production of high alloy steel castings (p. 89). Concluding part is carried this week. Mr. Worrilow is president of Lebanon Steel Foundry. The man behind the scenes on this series is Dan Reebel. He does the contact work in lining up the various authors, and handles what editing is necessary. Reprints are available on all the articles. Requests are coming in already for the high alloy steel castings piece.

We are also getting a lot of comment on Walt Campbell's coal roundup last week (p. 53). Walt's analysis of the fundamental illness of the coal industry as over-production, not John L. Lewis, aroused some surprise.

What's New in STEEL

Our circulation men from all over the country were in town a few days back to see what's new in STEEL. They were given an advance look at several special jobs we will be running soon (more about that later) and also the new setup for our Business Trend section to begin in next week's issue, Feb. 27.

The editors upstairs have been experimenting for weeks with a new layout for this department. It has been expanded to four pages to give you in one package the business prospects for the weeks ahead. More production figures will be carried: more interpretive information will be presented to help you understand the mercurial American trends.

Shradu

(Editorial Index—page 47)

STEEL

Vol. 126—No. 8 February 20, 1950

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...EXT WEEK • • •

How To Cut Assembly Costs With Power Impact Tools

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Heat Used as "Tool" Expedites Machining of Tough Materials

STEEL

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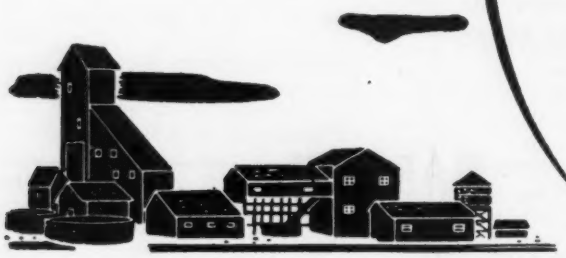

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February 20, 1950

Economic Virtue

At the 19th Annual Midwinter Conference of the Public Utilities Buyers Group of the National Association of Purchasing Agents in Detroit last week, J. W. Parker, president of the Detroit Edison Co., was called upon for a word of welcome at the opening session. In a brief period he outlined a philosophy for American business which should be considered carefully by everybody identified with industry in this nation.

Mr. Parker had returned recently from Europe, where he had been strongly impressed by the attitude of industrialists in Germany and neighboring countries of Western Europe. Almost without exception, these industrial leaders look upon competition as something to be avoided. They think in terms of cartels and similar devices for controlling production and costs and for partitioning markets.

These attitudes, in Mr. Parker's opinion, are largely responsible for the fact that industrial Germany—in spite of its many skills in technology—failed to keep pace with industrial America following World War I. Also they probably contributed to the national situation which made it possible for Hitler to assume a dictatorship.

With this object lesson so clearly before us, Mr. Parker believes that industrial leaders in the United States should cherish free competition as one of our strongest national assets. We should be constantly on the alert to check movements that would tend to prevent competition. He said that in talking with producers from whom he buys steel, he is convinced there is real competition in steel. There also is real competition among the manufacturers of electrical equipment who sell to utility companies. The real competition among automobile manufacturers is obvious to everybody.

But beyond these examples where keen competition is manifest are numerous opportunities where sly practices could be introduced to dull the edge of true competition. What we need is a more positive consciousness among businessmen that any such attempts to circumvent the spirit of free competition are extremely dangerous to the national economy.

Mr. Parker's observations on the value of competition are timely. The more we are able to comprehend competition as an economic virtue rather than to regard it as purely a legal problem, the stronger will be our resistance to the ills which have impaired industry in so many other countries.

* * *

PRICED OUT OF WORK: Machine Tool Editor Guy Hubbard says high labor costs as compared to lower costs of mechanical manufacturing and assembly operations are making it increasingly unprofitable to have things repaired. He hints that we may see an increasing number of subassembly machinery details made up in "packaged units." You will throw away the entire unit and install a new one instead of calling in a man to repair the damaged part.

This probably makes sense in our mechanized industry, but it poses a problem for the average citizen. Our economy has developed to the point where one cannot afford to call in the handyman to do a simple repair job. A company installed steel file cabinets to replace mahogany finished ones. The turn-in offer on the old ones was so low the company offered the mahogany units to employees free. A stenographer figured she could use two in her apartment to advantage. When she was told the cost of transporting the file cases from the office to her apartment she had to renege. Other employees

(OVER)

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came to the same conclusion. They couldn't afford to accept the cases free because of the exorbitant cost of moving.

This is typical of odd jobs everywhere. Millions are unemployed at a time when ten millions of people with money to spend hold off on necessary odd jobs because of the prohibitive cost. This makes one wonder whether or not the "do-gooders" unconsciously have raised the wages of handymen to the point where they have priced them out of lucrative employment. —p. 90

* * *

COAL'S MAJOR PROBLEM: Loss of markets by coal to other fuels has assumed alarming proportions. Industrial consumption of coal in 1949 was only 354.7 million tons compared with 442.3 million tons in 1947.

Dieselization was chiefly responsible for a drop in coal use by railroads from 109.3 million tons in 1947 to 68.2 million tons in 1949. Steel mill consumption of coal declined from 10 to 7.5 million tons. Utilities reduced consumption from 86 to 80 million tons. Cement mill use remained unchanged. General industrial consumption, other than railroads, utilities, steel, coke and cement, dipped from 124.5 to 99.9 million tons. In 1949 coal supplied 67.1 per cent of the home fuel market compared with 79.5 per cent in 1939.

Coal is too good a fuel to deserve this fate. Owners and miners face a tremendous job of reconstruction. —p. 55

* * *

BROADENING THE BASE: Since the end of the war there have been numerous instances where companies which for years had concentrated upon building machines for the metalworking industries suddenly branched into lines far removed from this field. In a majority of cases, the motive for broadening the market was diversification for the sake of greater economic stability.

Whether or not the tendency among equipment and machinery builders to engage in such diversification has reached the proportions of a trend remains to be seen. Nevertheless it is significant that in this issue three old-time equipment builders for the metalworking industries are in the news because of their entrance into new markets. United Engineering & Foundry Co. has acquired properties which take it into paper mill machinery and crushing, grinding and pulverizing equipment. Aetna-Standard Engineering Co. has a new "tie-in" which carries it into the development and building of machinery for processing leather. E. W. Bliss Co. has an interest in a New England company which manufactures textile machinery. —p. 74

* * *

UNAVOIDABLE NEW COSTS: Dr. R. E. Zimmerman, vice president, research and technology, United States Steel Corp. of Delaware, told members of the Calumet chapter of the American Society for Metals that certain new and unavoidable costs henceforth to be confronted by industrial corporations will tend to keep prices above prewar levels.

For steel producers, some of these new and unavoidable costs are development of wholly new ore mines, development of taconite ores, expanded beneficiation of coking coal and the control of sulphur, much more rigid control of industrial wastes and adoption of pensions and extension of social benefits. Total cost of these items in the years immediately ahead could easily amount to "between three and four billion dollars."

Similar new high costs will affect companies in almost every industrial group. —p. 60

* * *

TEAMWORK IN RESEARCH: Twenty-first in the series of articles on fundamentals in steelmaking is a two-part treatise on the "Production of High Alloy Steel Castings." The author is W. H. Worrilow, president of the Lebanon Steel Foundry, who has been an outstanding leader in the development of this specialized industry in the United States.

It is refreshing to note in the current installment the emphasis Mr. Worrilow places not only upon the contributions of such men as Harry Brearly, A. L. Marsh, Elwood Haynes, Benno Strauss, Edward Maurer and other metallurgists, but also and more particularly upon the important work of the Alloy Casting Association and subsequent organizations wherein the small number of foundrymen specializing in these alloy castings co-operated in research which has been invaluable to the development of the product.

One cannot read the fascinating story of this group effort without realizing that freedom to exchange technical experience for common benefit is one of the traits that is making America strong industrially. —p. 91

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

COAL—Look for metalworking production to sag like a deflated balloon if normal coal operations aren't resumed this week (p. 55). Bituminous stocks now are at a 30-year low. Steel users aren't so much alarmed about coal itself as about the effects the shortage will have on steel output. Blast furnace activity is already seriously affected. The paralysis could spread rapidly in the next few days to open hearths and rolling mills . . . A tangled labor situation isn't the only problem coal executives must face; they are losing markets (p. 55). Total industrial use of bituminous coal in 1947 was 442.3 million tons. Last year the total industrial consumption dropped to 354.7 million tons.

BUSINESS PROSPECTS—Despite the coal situation—or maybe partly because of it—long term business prospects look good. Tool and die shops are optimistic about television and automotive needs for tooling (p. 57). Most California manufacturers expect business in early 1950 to be as good as or better than a year ago (p. 57).

MOTOR CONTROL—A far less troublesome servant than coal to industrial operations is motor control (p. 59). It aids the performance of heavy electric equipment ranging from machine tools to crane hoists. Industrial motor control manufacturers had sales of $105 million last year and hope to have 5 to 10 per cent more this year. They won't if general capital equipment expenditures in 1950 fall below the 1949 level.

AUTOMOBILES—Auto dealers and manufacturers are far apart in their evaluation of sales prospects (p. 69). Dealers are apprehensive, makers still confident about the future. The disparity in outlook arises partly because of an overpopulation among dealers. The uneconomic sales firms are beginning to wash out.

DELIVERED PRICING—Don't expect any immediate decision on the Federal Trade Commission action against the steel industry's delivered pricing system (p. 58). To clear the matter up, steel companies want the FTC to issue a consent decree without findings of fact. Two members of the board are in favor and two against such a compromise. The problem might be decided one way or the other by a fifth member, but President Truman has not appointed one and seems in no hurry to do so. The pricing muddle would be clarified by congressional action, but legislation on the subject is moving at a snail's pace.

STEEL PRICES—You may as well wave good-bye forever to prewar steel prices (p. 60). It appears they can't come back because of new basic costs in producing steel. Dr. R. E. Zimmerman, U. S. Steel Corp.'s vice president for research and technology, says some of them are: Development of wholly new ore mines, development of taconite ores, expanded beneficiation of coking coal, control of sulphur and industrial wastes and adoption of pensions and extension of social benefits.

DIVERSIFICATION—Machinery builders who traditionally serve only the metalworking industry are diversifying their line (p. 74). Firms like United Engineering & Foundry Co., Aetna-Standard Engineering Co. and E. W. Bliss Co. have already expanded or are considering building machinery for textile, paper, leather, rubber, plastics, lumbering and woodworking industries.

HERE AND THERE IN INDUSTRY—Minnesota is worried about depletion of its ore reserves and wants the federal government's help (p. 62) . . . Prospect of political change has no apparent effects on British industrial activity, but the instability of the Bidault cabinet hurts the French economy (p. 66). . . . Kaiser-Frazer Co. is drumming up a big publicity drive to launch its new models (p. 70) . . . Steel production in January totaled 7,904,585 tons, highest since March, 1949 (p. 61).

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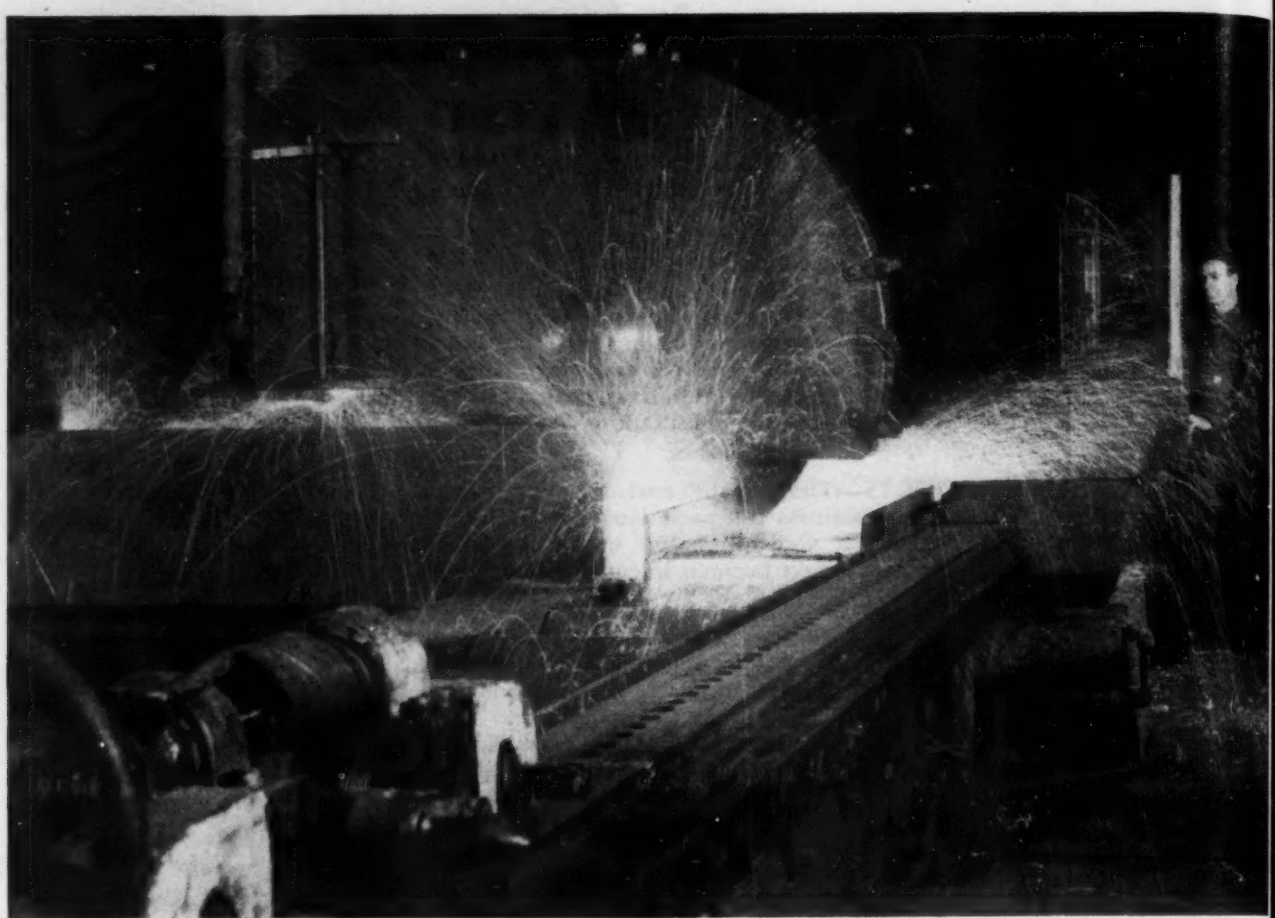

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STEEL
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Industrial Engine Losing Steam

Metalworking production will fall sharply if normal coal operations aren't resumed this week. Bituminous stocks average only seven or eight days' supplies

CREEPING paralysis in industrial production will be spurred to a gallop if coal is not mined this week.

Coal stocks now total no more than seven or eight days' supply as an average over the nation. Individual stocks vary widely from this average. In the worst shape are the railroads, in the best, public utilities. Industry is hardest hit in the Midwest. Railroads are transferring diesels from passenger to freight runs to conserve coal. They are confiscating bituminous in transit. Roads in the Youngstown area have one to two days' supply.

Few utilities will find it necessary to curtail their services this week as most have at least 20-day stocks. An exception in the utility situation is Duquesne Light Co. which has asked 44,000 commercial and industrial customers in the Pittsburgh area to curtail power use by 20 per cent from 8 a.m. to 9 p.m. week days.

Big Stockpiles Help—The industry that is still going today is doing so because: It has extra large stockpiles gathered for just such an emergency; it can use standby oil or gas facilities; it is buying low grade coal or is paying premium prices for normal grade bituminous being mined in the handful of pits that have signed with Mr. Lewis; it is taking advantage of mild winter weather to skimp on heating. Steel mills are using more scrap and cold iron in place of hot metal in their open hearths to save coke needed to produce the blast furnace iron. Scrap prices are firmer as a result.

As of late last week, Republic Steel Corp. had closed five of its blast furnaces; 11 others are operating at a curtailed rate. Armco Steel Corp. has shut down two blast furnaces and will bank two more this week if the supply situation doesn't improve. Inland Steel Co. has five of its eight blast furnaces down. There were 40 out of 47 blast furnaces in the Pittsburgh district still pouring last week. Bethlehem Steel Co. has taken two blast furnaces out of service. Geneva Steel Co. curtailed coke oven, open-hearth and blast furnace output one-third at Geneva and Ironton, Utah. Tennessee Coal, Iron & Railroad Co. has taken off two blast furnaces.

Fanning Out — With steel users, coal itself is not the most serious problem. It's steel. Rolling mill operations soon will be badly crimped if the miners continue idle. A steel shortage that is already being felt in metalworking could reach proportions of the immediate postwar scarcity. General Motors Corp. and Ford Motor Co. are "reviewing" the steel and coal supply situation today. General Electric Co. will be forced to halt entirely this week its production of refrigerators and other major appliances if more steel rolling mills go down.

Coal Losing Markets

Industrial consumption drops sharply due to uncertain availability, higher prices

Management in the coal industry is alarmed at the loss of markets to other fuels. And it's high time for labor to begin to share that alarm with the public and industry.

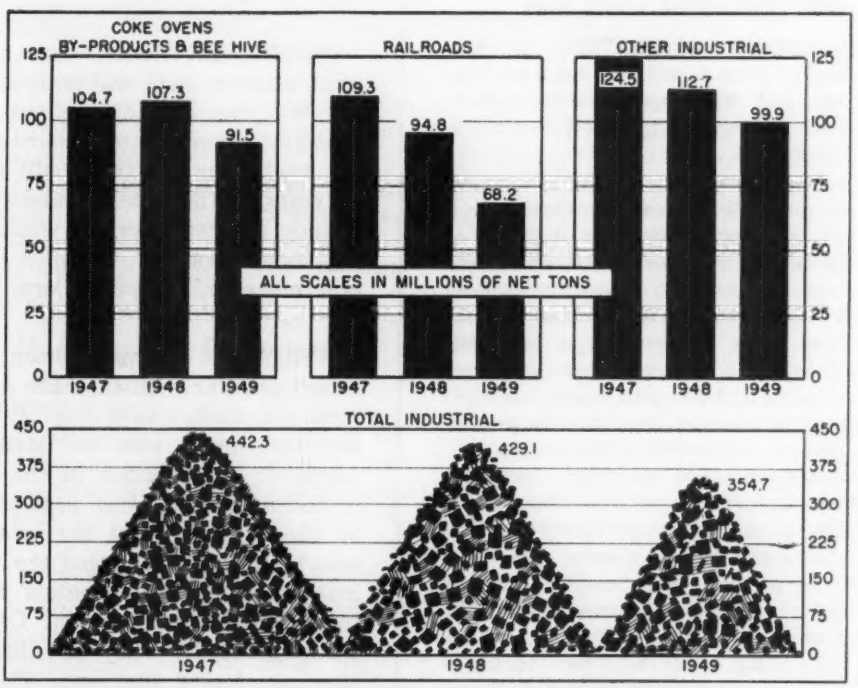
A glance at the chart below shows how industrial consumption of coal has been dwindling since 1947. Total industrial use of bituminous coal that year was 442.3 million tons. Last year the total industrial consumption dropped to 354.7 million tons.

Railroad Use Drops Sharply—Railroad coal consumption dropped from 109.3 million tons in 1947 to 68.2 million tons in 1949. This reflects the trend toward dieselization.

General industrial consumption (other than railroads, utilities, coke ovens, cement mills and steel and rolling mills) dipped from 124.5 million tons in 1947 to 99.9 million tons last year. Steel mill consumption dropped 25 per cent from 10 to 7.5 million tons. Utilities are down more moderately from 86 to 80 million tons. Cement mill use is unchanged.

The shift to other sources for energy and heat by industrial concerns results in part from the uncertainty as to coal's availability and to higher prices necessitated by wage and welfare demands by the miners and insistence that uneconomic units be kept in production.

Home Fuel Markets Shift—Yet another disturbing factor is the home fuel market. Coal still has 67.1 per cent of it, compared with 79.5 per cent in 1939. Oil and gas have 32.9 per cent of the market now, compared with 20.5 per cent a decade ago. About 18 per cent of total coal



COAL INDUSTRY OUTLOOK DARKENS
. . . . *there are fewer customers and they're using less*

sales now go to domestic or small commercial users.

What's to be done? The coal industry can regain its position by cutting costs, says Stephen Krickovic, chief engineer of Eastern Gas & Fuel Associates and speaker at a Cincinnati meeting of Bituminous Coal Research Inc. This group is the national research agency of the bituminous coal industry. Another speaker at the meeting, Eugene D. Benton, director of research for Ohio Coal Association, believes sales will increase as a result of the industry's development program in reducing air pollution and improving coal utilization.

Mechanical Mining—BCR's Mining Development Committee is making progress toward reducing costs. A basic design for a continuous mining machine has been evolved in relation to various coal seam and mining conditions. Test units are being tried underground. The industry wants a machine to drive headings, breakthroughs and rooms, and to mine pillars under the existing room and pillar systems without the use of auxiliary cutting and loading machines. Tests on the devices thus far developed do not yet indicate whether all these specifications have been met.

To increase utilization of coal, BCR is studying improved methods and equipment for fly ash collection for locomotives and industrial plants. The group has also examined the technical and economic factors affecting production of fuel gas from coal.

Iron Production Costs Rise

GROWING SCARCITIES of the higher grades of Lake Superior iron ore and high quality metallurgical coal are raising the steel industry's production costs.

Because of the necessity to rely increasingly on lower grades of iron ore and coal the steel industry is having to use more coke for fuel to smelt the ore and more limestone as a flux to remove impurities. In recent years, the production of a ton of iron has required 7 per cent more coke and 23 per cent more limestone on the average than in the prewar period, 1935-1939. This, says the American Iron & Steel Institute, means each ton of iron takes about 300 pounds more of these two raw materials than a decade ago.

In prewar years one ton of pig iron required an average of 0.357 tons of limestone and 0.887 tons of coke. By 1948 these two tonnages had increased respectively to 0.44 and 0.954. That is a combined increase of 12 per cent.

Pensions Approved

Shareholders say "yes" to retirement programs. Social insurance agreements announced

PENSIONS for steelworkers are being approved by stockholders by overwhelming votes. This does not necessarily mean that the shareholders approve of company-paid pensions as forced upon the steel companies; rather it is a formal action approving management in making the best possible settlement.

Shareholders of Youngstown Sheet & Tube Co. and Inland Steel Co. approved pension plans at special meetings Feb. 14 and 15, respectively. Wheeling Steel and Bethlehem Steel owners had given approval earlier.

Coincident with the pension approval, Youngstown Sheet & Tube management announced agreements on a new social insurance program had been signed with its CIO unions. The program's cost will be shared by company and employees. Company will contribute 2½ cents an hour. Employees will pay from a minimum of $3.40 a month (for a single man earning less than $2250 annually) to $9.85 a month (for married employees earning more than $4500 annually).

Benefits include: Life insurance ranging from $2400 to $7500; paid up insurance of $1250 on retirement; weekly sickness and accident benefits of $26 for 26 weeks; hospitalization allowances of $10 a day for employee and dependents; plus $150 for extras; surgical fees on a $150 scale.

Inland's pension plans will become effective Mar. 1. Under them each Inland employee will have a choice of two pension plans, a new noncontributory plan and the contributory plan which Inland first put into effect in 1936.

Looking at Labor Trends

"CERTAINLY we are not going to find ways to improve and strengthen collective bargaining if either labor or management is to rely on government 'fact finding' for the settlement of disputes. Where the government steps in, there can be no collective bargaining, no real meeting of minds on principles or practices . . . We are firmly opposed to the setting of patterns for whole industries or segments of industries, whether through 'fact finding' or through other means. A pattern may work to the great advantage of the patternsetter, but to the great disadvantage of other companies in the industry. And it often works a special hardship on the smaller, marginal producers who are unable to match the resources of their larger competitors."—Mel B. Lindquist, general industrial relations manager, Ford Motor Co.

* * *

"'CENTS PER HOUR' does not pay pensions. Nobody can tell what pension costs will be over a given period. The real question is: Will the retired employee collect each month for life. The strongest assurance of pension payments is the company's guarantee, backed by the full credit and resources of the company. For 25 years, we have never missed a payroll. Our obligation to meet pension payments for life would be just as binding as that of paying current wages."—Herman L. Weckler, vice president and general manager, Chrysler Corp.

* * *

"EVERYONE in management knows that the pension parade wasn't popular with the rank and file, never had enthusiastic support, and doesn't have now. Everyone knows that the steel strikes were unpopular with the strikers, that the only employee vote taken on the question in the automotive field was for pensions or nothing, not between pensions and something. Everyone knows, or should know, that the local unions have protested that they aren't interested, but that the international won't listen . . . That makes two big 'fundamentals' which the unions have decided to go for in ivory-tower fashion. One was the drive for union veto on work standards. They lost that one. The next was pensions, and they are losing that one. The next will be the union shop."—Frank Rising, Automotive & Aviation Parts Manufacturers Inc.

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Toolmakers Optimistic

Encouraging reports on tool and die outlook come from widely scattered areas

BUSINESS outlook appears good to the National Tool & Die Manufacturers Association. Encouraging reports come from widely scattered areas, including New York, Providence, Detroit and St. Louis.

Television is still producing good business for eastern tool and die shops, and new automobile transmissions and engines are helping Detroit area prospects. Most shops are working a 40-hour week, but in some small cities a 45-hour week is common.

Late 1949 Level Holds—Business activity for tool and die companies now is generally at the same rate as in late 1949, when shipments were about 85 per cent of the rate for the year previous. In 1948 the industry performed at a record peacetime peak.

Disappointing is the small volume of orders placed for tooling or development work for the rearmament program. Aircraft companies and other firms with large prime contracts apparently are producing most of the special tooling required in their own tool rooms. Contract tool and die makers may get more business when these programs are more advanced. Equally disappointing are the low prices at which government contracts for small metal products or parts are being awarded.

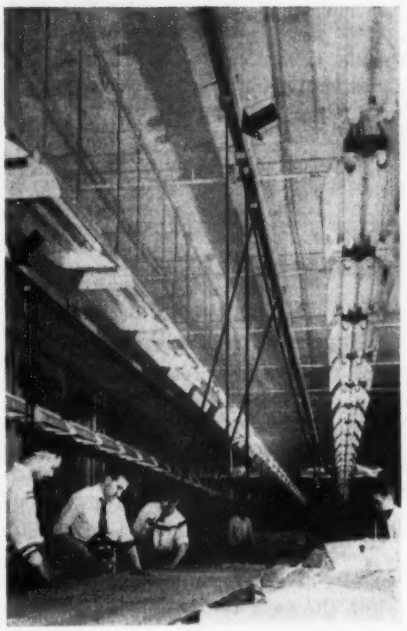
Aluminum Capacity Grows

The domestic aluminum industry's productive capacity is up 9 per cent now that Aluminum Co. of America has opened its reduction works near Port Lavaca, Tex.

The industry's potential will rise another 2.3 per cent in March when Reynolds Metals Co. puts its Jones Mills, Ark., reduction plant in full operation (See STEEL, Feb. 13, p. 58). When these facilities of two of the nation's three leading producers are in full operation, the annual U. S. aluminum smelting capacity will be raised 146 million pounds to a total of 1,434,230,000 pounds.

Heavy order backlogs give promise that the industry will operate its primary facilities at least through the first half of 1950. Another optimistic factor is the addition of aluminum to the list of strategic materials to be stockpiled by the government.

Alcoa's Texas plant, built in less than two years, is the only new facility for making primary aluminum constructed in the U. S. since the end of the war.



OVERHEAD ELECTRIC HIGHWAY: Engineers of Trumbull Electric Mfg. Co., Plainville, Conn., developed a new kind of plug-in or "busway" for small power tools, business machines, appliances and for lighting. It is called the LTG Flex-A-Power. Rated 50 amperes, 250 volts, it makes two, three or four circuits available in one compact housing and allows independent control over each. Every inch of LTG is a potential outlet

Chicago Plant Outlays Up

Plant outlay in the Chicago area in January amounted to $22,270,000, the largest total for any one month since September, 1948, says the Chicago Association of Commerce & Industry. Thirty-eight companies, including three new to Chicago, contributed to this investment in new plant construction, additions or the purchase or lease of industrial land and buildings.

Important among the January developments is Budd Co.'s purchase of land in Gary for construction of a stamping and body assembly plant (p. 74).

More Heaters, Defrosters

The Harrison Radiator plant of General Motors Corp. in Buffalo is operating at the highest rate in history. The plant is turning out 12,000 car heaters and 2000 defrosting units a day.

Trico Works Six Days

Trico Products Corp., Buffalo, is working six days a week in several departments of its three Buffalo plants to meet increased demand from automakers. Trico makes gages and other automotive equipment.

Sunny California

Business weather looks good there. Manufacturers see high volume for early 1950

MOST California manufacturers expect business in early 1950 to be as good as or better than a year ago.

A poll of business prospects by the California Manufacturers Association shows that 38 per cent of the executives interviewed expect the volume of business to be about the same as a year ago, while 32 per cent expect increases in volume ranging from 5 per cent to 55 per cent. A decline in sales is anticipated by 26 per cent of the manufacturers, while 4 per cent are undecided.

Caution Still the Byword—Most manufacturers are still using caution in expanding inventories of raw or semifinished materials. Of the executives polled, 40.6 per cent report their firms plan to be carrying smaller inventories this year than last. Another 34.7 per cent indicate inventory positions will remain about the same, while 20.6 per cent forecast larger stocks will be carried. The remaining officials are undecided.

Another clue to trend of business volume is shown at the February market week conducted by the Western Merchandise Mart in San Francisco. Some 2200 distributors and manufacturers displayed consumer wares at the market, and officials estimate that sales contracts closed during the week-long event total around $200 million compared with about $150 million in the February market week a year ago.

Demand for Durable Hard Goods—Demand was heaviest for durable consumer goods, especially furniture and household appliances. This reflects the continued high rate of new home building and more stable prices.

Although farm employment in California is trending lower, factory payrolls remain relatively steady, and prospects are that manufacturers will employ about as many in 1950 as a year ago.

In an employment poll conducted by the manufacturers association, 60 per cent of the state's manufacturing plants report they will employ as many the first part of 1950 as a year ago; another 17 per cent report they will increase payrolls, while 21 per cent say fewer workers will be employed. Two per cent of the manufacturers are uncertain.

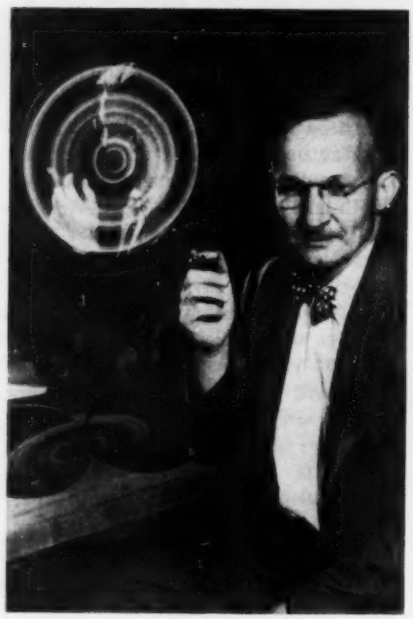
Central Orders 4500 Cars

An order for 4500 freight cars to cost an estimated $23.7 million is announced by the New York Central

System. The order is the largest placed by any railroad since the Central's purchase of 5350 cars in December, 1948, and is larger than any placed by any other road since April, 1948.

Pullman-Standard Car Mfg. Co. will build 1500 all-steel box cars at Michigan City, Ind. The remaining box cars and gondolas will be supplied by Central's affiliated Despatch Shops Inc., East Rochester, N. Y.

Deliveries are scheduled to begin in May and be completed before the end of this year.



NEA

BRIGHT FUTURE: Dr. Arthur F. Turner, head of Bausch & Lomb Optical Co. Laboratory at Rochester, N. Y., poses with a new filter that may bring color to television. It promises to aid technicians in photography, refractometry, vision testing and astronomy as well. Three thin films of silver and magnesium fluoride are applied under high vacuum to one side of the glass

Willard Cuts Battery Prices

Heavy duty and standard type storage battery price reductions are announced by Willard Storage Battery Co., Cleveland. Cuts are $2.50 and $4 on batteries for the replacement market. They are in line with similar price reductions made by other battery makers earlier this month.

Bringing the Buyers to You

A hundred-odd companies were busy proving to themselves last week that it's good business to display their wares where a lot of purchasing and engineering men can see them.

The 16th Annual Products Show sponsored by the Purchasing Agents Association of Chicago attracted over 10,000 members of the buying fraternity. Practically every booth offered visitors a look-see at new products or new applications, many of which were played up for their cost-cutting features, their ease of maintenance, or automaticity.

Pricing Puzzle

Can FTC accept steel industry's consent decree without findings of fact? Commission's not sure

WILL the Federal Trade Commission approve the proposal of respondents to settle the steel basing price case with a consent decree without findings of fact?

The answer to the question is uncertain in the light of what went on when the four present commissioners —Mason, Carson, Mead and Ayres— heard arguments pro and con. Questions put by the commissioners reflected some degree of doubt on their part as to whether they have the power to approve the consent decree without admissions and findings of fact. Uncertainty on the part of the commissioners was not helped any by the usual split among the staff members who testified. Hearings will be continued on Feb. 23.

Says Commission Has Power — Lynn C. Paulson, assistant trial counsel, who acted as trial attorney throughout the steel case, held not only that the commission has the necessary power, but that the closing of the steel case by way of the proposed consent decree would be very much in the public interest. But Everett MacIntyre, Corwin D. Edwards and Richard P. Whiteley, who comprise pretty much the heart of the FTC staff, were opposed. In lengthy statements they held that the commission is devoid of the necessary power; besides, they held, acceptance of the steel industry's proposal would not be in the public interest.

Observers thought the MacIntyre-Edwards-Whiteley objections were pretty well knocked in the head by a masterly analysis of all laws bearing on the subject. This was presented by steel attorneys who quoted verse and page to prove that the commission could accept a consent decree without findings of fact; they also disclosed that the commission in past years has resorted to this same power —so that the matter of precedent is not now involved.

Every Mill a Market—"The proposed order," explained Mr. Paulson, "would make a market at every mill where steel is produced and shipped." Whereas in the old days six of the country's 41 bar mills were basing points and the rest all sold at delivered prices under the old multiple-basing-point-delivered-price system, all 41 now have mill prices and would continue to quote such mill prices in the future.

"We (Mr. Paulson was referring to his talks with the steel attorneys) talked about various kinds of wording so as to define, if possible, the mill prices that might be considered fair and just from the standpoint of consumers—but in each case we had to stop because we were getting into the realm of price fixing. For instance, we talked about stipulating that the producer could not quote f.o.b. mill a higher price than his highest delivered price resulting from freight absorption—but that meant price fixing.

Confident of Reasonable Prices — "I personally take the attitude—and feel that I can reassure the commission on this point—that steel companies will quote reasonable mill prices. In the first place, the steel buyers exert very powerful pressure to keep steel prices down; secondly, you must bear in mind that the commission's enforcement officer can call in any of these respondents at any time and take action in case the respondents are failing to live up to the spirit of the agreement."

Freight Absorption No Issue — As to freight absorption, Mr. Paulson said he did not think this is much of an issue any more. "I do not hear anybody argue any more for exclusive f.o.b. mill pricing. I think everybody is agreed that sellers have the right to absorb freight when they do it individually and in good faith. So we are not yielding anything by inclusion of the freight absorption provision. Of course, freight absorption is necessary under really competitive conditions; if you deny the right to absorb freight, you are reducing competition—not increasing it."

"You say steel consumers can exert powerful pressure to prevent steel prices from going to unreasonable levels; that probably is true of the big consumers, but would you say that the small consumers are similarly able to protect themselves against unreasonable steel prices?" asked Commissioner Carson.

"I think that will be taken care of through the competition we propose to have under this agreement," responded Mr. Paulson. "But the situation will have to be watched. The commission's enforcement officers must be alert to make sure that the conditions we hope to bring about actually will materialize."

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Motor Control Regulates Production Current

By harnessing electricity to industrial use, motor control saves labor and increases production with greater automaticity—and industry needs more

A STRANGER in town asked a local citizen the way to the post office. The native thought and thought. Finally, he drawled: "You can't get there from here."

A man in the 1890s, given a hint of what was in store industrially by 1950 and asked to comment, might have said the same thing. He probably would have been right if there had been no industrial motor control. But industrial motor control did come along. Many of the first devices, introduced over 50 years ago, made use of manually operated rheostats like those common to streetcars. Next step was to reduce the human element with semiautomatic or fully automatic units. By 1900 motor control was helping harness electricity to industrial uses to cut costs, save labor and increase production with greater automaticity. It's still doing the same thing, for industry needs automaticity more than ever.

What Is It?—Industrial motor control makers serve any industry using heavy electric production equipment. Broadly speaking, they make devices:

1. To control motor speed, as in assembly lines.
2. To control use of power energy, as in regulating the current for resistance welding.
3. To give greater automaticity, as in dynamic braking on crane hoists.

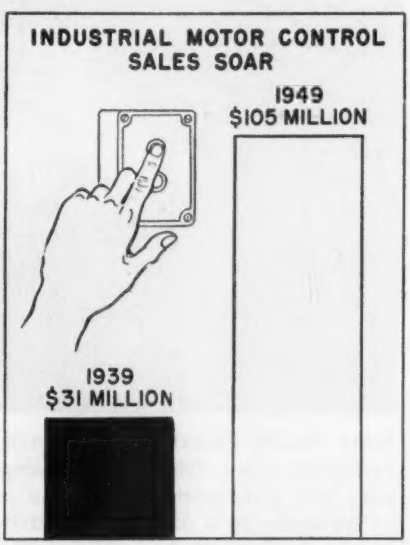
The industrial motor control industry did an estimated sales volume of $105 million last year (see chart), compared with $31 million in 1939. It hopes to better the 1949 level by 5 or 10 per cent in 1950, but this is predicated on a good volume of new tooling by the automotive and allied industries later this year. Some manufacturers are more pessimistic about prospects because the government estimates that capital equipment purchases will be 15 to 17 per cent less in 1950 than in 1949. Major buyers of the industrial motor control equipment are automotive, rubber, steel and machine tool companies.

More Manufacturers—About 40 companies make industrial motor controls today, compared with about 30 in 1939. Bulk of the sales volume is done by less than ten companies, nearly the same group that led in 1939. It's hard for a new company to enter this field because of the great technical know how and initial plant expense involved. Many companies are in the industrial motor control field on a fringe basis only, concentrating more of their efforts on control apparatus for domestic appliances or other equipment.

Manufacturing cycle on special control equipment is about eight weeks. A four-week order backlog, normal lately, makes delivery about three months away. Most standard products are made for stock and are available for immediate delivery. Big headache with motor control makers is split production—for tailor-made products and standard items. The industry itself has a cost-cutting problem in trying to standardize even its one shot jobs as much as possible.

Research Up—More research is going into standard products, to enable the control industry to lower its production costs. Every tailor-made job is at least partly a research problem, so the industry is spending more on development than at any time in its history.

One new standard product, made by several companies but operating on varying principles, is a device to save heavy motor starters in case of power failures. Electric Controller & Mfg. Co., Cleveland, builds its right into the starter . . . Square D Co., Detroit, offers new control systems for small industrial trucks . . . Improvements have been made in hoist controls . . . Introduction of control centers, in which all control equipment is grouped centrally, has been a recent trend with Clark Controller Co., Cleveland, and others . . . New accessories are now offered, such as pressure and float switches in the pump field . . . New motor control products introduced by Westinghouse Electric Corp., Buffalo, include electronic welding control with fewer moving parts.



Figures are estimated, based on breakdown by National Electrical Manufacturers Association

These and other developments may be the bases for new industrial peaks by the year 2000. Motor control advances promise to get us "there from here."

Automatic Juice Freezer Made

Food Machinery & Chemical Corp., San Jose, Calif., has perfected a new machine to automatically freeze a continuous flow of canned orange juice concentrate at the rate of 300 cans per minute. Several installations already have been made in California packing houses.

The new device is a large cylindrical steel shell housing an internal circulating system carrying a special refrigeration fluid. Cans of juice are fed into the machine and positioned automatically on a conveyor which revolves and rolls them through the rapid freezer. The machine eliminates manual handling and provides faster and more thorough freezing.

Summer Refrigerator Shortage

Look for a shortage in household refrigerators next summer.

Industry sales in January were unexpectedly high, about 15 per cent ahead of the same month last year. Production cannot keep up with demand as long as the coal strike continues so scarcities may develop by summer, normally the period for highest sales.

Ward Catalog Prices Lower

Montgomery Ward & Co. is mailing customers its new 964-page spring and summer catalog that features scores of price reductions and a number of items not previously offered.

Prices of electric appliances are generally lower. Washing machines, which range from $54.95 to $106.95, are $5 to $10 lower than they were in the fall catalog. Refrigerators, which sell for from $169.95 to $279.95, have also been reduced between $5 and $10. Home freezers, electric ranges and ironers are also lower.

Television Sales Mount

Stromberg-Carlson Co.'s first quarter television business is running about 25 per cent more than the combined video-radio sales in the first quarter of 1949.

The Rochester, N. Y., company is continuing to allocate video sets to distributors and is limiting distribution to fewer markets than a year ago.

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Prewar Steel Prices Gone Forever?

New expenses arising since the war, many of them of continuous nature, add substantially to steel production costs. Producers must rely increasingly on earnings to pay them

PREWAR price levels of steel are gone for good.

Some minor price reductions may be made as competitive conditions tighten but the prices won't drop back to prewar level.

That inference can be drawn from what Dr. R. E. Zimmerman, vice president, research and technology, United States Steel Corp. of Delaware, told the Calumet chapter, American Society for Metals at Hammond, Ind.

New and Unavoidable Costs — What'll hold prices up? New and unavoidable costs. What are they? Some of the important ones, says Dr. Zimmerman, are development of wholly new ore mines, development of taconite ores, expanded beneficiation of coking coal and the control of sulphur, control of industrial wastes, and adoption of pensions and extension of social benefits. Total cost of these items in the years immediately ahead is hard to estimate but "a guided guess" of Dr. Zimmerman is that it "can easily arrive somewhere between three and four billion dollars." Many other economic problems need attention too.

Commenting on some of the steel industry's new and added costs of doing business, Dr. Zimmerman asserts that search for and development of new ore deposits will require that companies engaged therein be prepared to "multiply one hundred million dollars in outgo many times over to arrive at the eventual fulfillment of their plans and purposes."

Taconite Development Costly — To find the most economical methods of concentration and utilization of taconite more hundreds of millions of dollars are required, he adds.

Citing the higher sulphur content of metallurgical coals upon which the steel industry must now depend, Dr. Zimmerman points out the need for additional sulphur control work. Processes being tried or to be tried "entail expenditures and costs, but they are real technical problems which have strong economic implications, and must be resolved," he says.

Paying for Pollution Prevention— Touching on the formidable task of handling industrial wastes, Dr. Zimmerman reports that in compliance with comprehensive regulations recently put into effect to halt stream pollution, industry is doing its share in the clean-up and "paying some very large bills to cover its share of the expense, with more to follow."

Prevention of air pollution is being required too, and industry, he points out, is faced with some formidable projects which will tax severely its ingenuity and its funds.

"In the steel industry alone the handling of all condemned waste products, solid, liquid, and gaseous, could require," he estimates, "the expenditure of more than a few hundred million dollars for equipment, to which would be added the continued operating costs."

Pension Responsibility Continuous —Commenting on the additional financial burden of pensions and social benefits, Dr. Zimmerman emphasizes that one characteristic of them is that "the obligation to pay them does not disappear simultaneously with lowered earnings or profitless operations, nor does the need become less in periods when business is shrinking." Citing the magnitude of such obligations, Dr. Zimmerman says "one can raise visions of an increased total annual expense in excess of $200 million for the primary steel producing group alone."

Where is the money for these new and added financial obligations to come from? On that multimillion dollar question Dr. Zimmerman attempts to throw some light. "The financial people tell us that one of the logical sources, risk capital, as usually furnished by individuals or groups who wish to invest in industrial enterprises so that their savings may produce a reasonable return, is running dry." Two alternatives exist, he explains.

Must Finance from Earnings — Business can go into debt by borrowing money, or it may use what is left of its net earnings. "As prudence demands that debt be kept within safe limits, it is desirable that recourse be taken, at least in part, to financing from earnings," Dr. Zimmerman declares. "The important point in this connection is that there be some earnings," he adds.

To protect earnings ability after "taking stock of the existing situation and appraising its manifold needs as carefully as possible, various units of the steel industry recently adjusted and moderately increased the prices of their products," Dr. Zimmerman recalls.

Considering that the economic problems of which Dr. Zimmerman spoke arose largely after the war and appear to add a continuous burden of cost to the steel industry, there seems to be no possibility that steel prices can drop back to prewar levels.

Follansbee Adds to Warehouse

Steady improvement in the industrial outlook for the upper New York

MAN MADE HURRICANE: To test a new General Electric modified base-ventilated motor, GE engineers whipped up a storm with the help of a fire hose and a motor-driven airplane propeller. A rain-like spray was directed at the motor on a concrete base and freezing particles adhered to the housing and shaft of the motor. After half an hour of this treatment, the motor was disassembled. Coils, inner air passages and bearing housings were dry

state area has influenced Follansbee Steel Corp., Pittsburgh, to expand its warehouse facilities in Rochester.

To obtain the needed room, the company is moving its Follansbee Metal Warehouse to 961 Lyell Ave. These larger quarters will provide 75 per cent more floor space and 350 per cent more storage. The move and enlargement, scheduled for completion in 60 days, will permit the warehouse to carry a more extensive line of products.

Thomas E. O'Neal continues as manager of the Rochester facilities.

Follansbee has two other warehouses. One is in Pittsburgh, the other at Fairfield, Conn.

Skyscrapers for Pittsburgh

WAY for a $50 million "Rockefeller Center of Pittsburgh" is clear now through the signing of a contract by Pittsburgh Redevelopment Authority and Equitable Life Assurance Society.

The project involves three office skyscrapers adjacent to Point Park.

Also included is the purchase by the city of Peoples Natural Gas building, at Sixth avenue and William Penn place, which will be razed to make way for an $8 million park and underground parking garage.

The redevelopment authority plans to purchase Jones & Laughlin Steel Corp.'s office building on Ross street for use by businesses moved from the redevelopment authority and by city offices. Nearly 900 J & L office employees will move into one of the Equitable skyscrapers early in 1952.

Construction is well underway in downtown Pittsburgh on the Mellon-U. S. Steel 39-story office building, while Aluminum Co. of America plans to take additional steps this spring toward construction nearby of its proposed all-aluminum exterior skyscraper of similar height.

Steelmaking at Ten-Month High

STEEL production in January totaled 7,904,585 tons, the highest monthly total since March, 1949, says the American Iron & Steel Institute.

This figure tops the 7,717,258 tons of ingots and steel for castings shown in the revised total for December but falls short of the 8,183,495 tons produced in January, 1949. Steelmaking furnace operations in January averaged 93.6 per cent of the industry's new 99,392,800 tons annual capacity. Capacity in 1949 was 96,120,930 tons.

More Western Steel Capacity?

U. S. Steel Corp. next year might begin planning increased production facilities in the West if the area continues to grow. Benjamin F. Fairless told that to reporters in San Francisco when he was enroute to Honolulu for a vacation.

"While we have no immediate plans for increasing western ingot capacity, another year might require us to make other plans," he said. The corporation is already considering construction of an East Coast steel plant at Morrisville, N. J.

Ingot Output Highest Since March, 1949

Period	Estimated Production—All Companies: Open Hearth Net tons	Open Hearth Per cent of capacity	Bessemer Net tons	Bessemer Per cent of capacity	Electric Net tons	Electric Per cent of capacity	Total Net tons	Total Per cent of capacity	Calculated weekly production (Net tons)	Number of weeks in mo.
1950										
†Jan. ..	7,111,201	96.2	379,252	80.6	414,132	70.9	7,904,585	93.6	1,784,331	4.43
1949										
Jan. ...	7,287,683	101.1	408,552	92.6	487,260	93.8	8,183,495	100.2	1,847,290	4.43
Feb. ...	6,633,779	102.0	379,698	95.3	467,247	99.6	7,480,724	101.4	1,870,181	4.00
Mar. ...	7,473,901	103.7	430,176	97.5	483,850	93.2	8,387,927	102.7	1,893,437	4.43
1st qtr. .	21,395,363	102.3	1,218,426	95.2	1,438,357	95.4	24,052,146	101.5	1,870,307	12.86
Apr. ...	7,015,611	100.5	404,095	94.6	365,570	72.7	7,785,276	98.4	1,814,750	4.29
May ...	6,889,230	95.6	400,741	90.9	299,751	57.7	7,589,722	92.9	1,713,256	4.43
June ...	5,954,619	85.3	349,196	81.8	194,386	38.6	6,498,201	82.2	1,514,732	4.29
2nd qtr. .	19,859,460	93.8	1,154,032	89.1	859,707	56.4	21,873,199	91.2	1,681,260	13.01
1st 6 mos.	41,254,823	98.0	2,372,458	92.1	2,298,064	75.8	45,925,345	96.3	1,775,236	25.87
July ...	5,307,471	73.8	300,236	68.2	171,415	33.1	5,779,122	70.9	1,307,494	4.42
Aug. ...	6,101,499	84.7	355,335	80.6	257,910	49.7	6,714,744	82.2	1,515,744	4.43
Sept. ...	5,992,306	86.1	350,282	82.2	247,601	49.3	6,590,189	83.5	1,539,764	4.28
3rd qtr. .	17,401,276	81.5	1,005,853	76.9	676,926	44.0	19,084,055	78.8	1,453,470	13.13
9 mos. ..	58,656,099	92.5	3,378,311	87.0	2,974,990	65.1	65,009,400	90.4	1,666,908	39.00
Oct.	814,374	11.3	.....	...	111,059	21.4	925,433	11.3	208,901	4.43
Nov. ...	3,805,730	54.5	172,270	40.3	238,262	47.4	4,216,262	53.3	982,812	4.29
*Dec. ..	6,951,572	96.7	396,075	90.0	369,611	71.3	7,717,258	94.7	1,745,986	4.42
*4th qtr..	11,571,676	54.1	568,345	43.4	718,932	46.7	12,858,953	53.1	978,611	13.14
*2nd 6 mos. .	28,972,952	67.8	1,574,198	60.2	1,395,858	45.3	31,943,008	66.0	1,215,950	26.27
*Total ..	70,227,775	82.8	3,946,656	76.0	3,693,922	60.4	77,868,353	81.0	1,493,448	52.14

Note—The percentages of capacity operated are calculated on weekly capacities of 1,668,287 net tons open-hearth, 106,195 net tons bessemer and 131,786 net tons electric ingots and steel for castings, total 1,906,268 net tons; based on annual capacities as of January 1, 1950 as follows: Open-hearth 86,984,490 net tons, bessemer 5,537,000 net tons, electric 6,871,310 net tons, total 99,392,800 net tons. 1949 annual capacity was 96,120,930 net tons.
* Revised. † Preliminary figures, subject to revision.

Ore Find Confirmed

Existence in the Dominican Republic of extensive magnetic deposits capable of producing a million tons of high-grade iron ore annually for many generations is officially confirmed.

Confirmation comes from the republic's Ministry of Economy in Ciudad Trujillo. The ore, says the ministry, contains an average of 68 per cent metallic iron and is "superior to the Swedish ore currently being imported by the United States."

The deposit, situated in Duarte province in the north central section of the republic and less than 100 miles from Ciudad Trujillo, is described as readily accessible and "from the technical point of view, exploitation could be begun at any time," the ministry's report says.

Plan Ore Handling Facilities

With their eyes on a profitable traffic of ore expected to move through Baltimore from new sources in Venezuela and Liberia, two railroads are laying plans for additions to ore-handling facilities.

Baltimore and Ohio awarded a contract to Dravo Corp., Pittsburgh, for the manufacture and installation of two ore-handling machines and a belt conveying system at the new $5 million ore pier (STEEL, Jan. 16, p. 44). The B & O layout has been designed so that its capacity to handle about 3000 tons an hour of iron, manganese and chrome ore can be doubled as soon as justified by the increased volume of imports.

The increased traffic in import ore, steadily increasing for several years, will be an important factor in the future of Western Maryland Railway. It will double the capacity of its existing ore pier by the end of this month when an additional crane will be ready to go into full operation.

B & O's new facilities will offer the railroad an excellent advantage: Their location near the company's coal pier will make empty coal cars available for quick switching to the adjacent ore facility.

To Build Marform Units

MARFORM metal forming units developed by Glenn L. Martin Co., Baltimore, will be manufactured and sold by Hydropress Inc., New York.

Arrangements for the New York company to produce and sell the units were made in line with Martin's policy of making its important new technical developments available to industry generally. In announcing the arrangements, the Martin company pointed out it is not a machine manufacturing concern and that it is continuing to concentrate its efforts on the design and manufacture of aircraft and related products.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, STEEL*

There's a story behind the glass jar of iron powder pellets in Rep. John Blatnik's office. He's from Minnesota's District 8 where most of the iron ore properties are located

DISTRESS SIGNALS are being hoisted by the congressional delegation from Minnesota. The group is worried about the future of iron ore in that state. Approaching depletion of the open-pit, high-grade reserves, and the search in other areas which already has turned up rich deposits in Labrador and Venezuela, are the causes of the alarm.

Along with this fear is a spirit of self-criticism: Even some Minnesotans admit that their iron ore tax policies have been on the stiff side. Some of the big ore interests have been running advertisements in iron range newspapers stating that they intend to stay in Minnesota; but Minnesotans are not so sure.

But they are agreed on one thing: Processes must be developed for economical utilization of Minnesota's immense reserves of taconite and lower-grade material. They are working quietly to get the federal government to undertake a big research project.

District 8—One of the leaders in the campaign is Rep. John Blatnik who lives at Chisholm and represents District 8 where most of the state's iron ore properties are located.

"While the state continuously has spent large sums on iron ore development," Mr. Blatnik told STEEL, "the task to be accomplished is too big for Minnesota alone. Besides, the problem involved is a national problem even more than it is a state problem. The Lake Superior area must continue to be, as for many years past, the country's principal source of iron ore; it would be a grave mistake to rely too heavily on foreign sources which might be cut off in time of emergency.

Spade Work—"To insure continued reliance on the Lake Superior fields a great deal of development work must be done, and the federal government should do its part. And, because such work takes time, it should be launched on an adequate scale as soon as possible."

The scheme under discussion is a double-barreled one, to be fired by the Bureau of Mines: One to aim at intensification of the work at the Minneapolis Station to develop low-cost methods of producing concentrates and sponge iron from taconite and other ores not now being commercially exploited, the other to aim at tying this program to the research work that the bureau is to begin shortly on North Dakota lignites. Now under construction at Grand Forks, N. D., is a new laboratory which will be used to develop a process for producing gas from lignite and to develop ways of shipping and storing lignite without the hazard of spontaneous combustion that has previously prevented wide use of that fuel. The plan is to accelerate the latter program by using lignite and lignite products in the taconite concentrating and sponge iron programs.

Distress in Minnesota

Iron Pellets in Glass Jar—Mr. Blatnik seeks inclusion of the research work of Continental Machines Inc. in the overall program of the Minneapolis Station. Continental is seeking a commercial process for production of iron powder. In his office, Representative Blatnik has a glass jar filled with iron powder pellets agglomerated and reduced by this company in a vertical shaft reduction furnace at Aurora, Minn.

Buildings Must Weather Climate

WHAT'S intelligent building design in one area may not be very smart construction only a few miles away. Building design and building equipment should vary not only in different areas but for sites within the same area.

Weather and geography make the difference.

That was only one interesting conclusion that conferees at a meeting on "Weather and the Building Industry" drew in Washington. They were part of a joint government-industry organization—the National Research Council's Building Research Advisory Board.

They made a number of sage observations about weather, geography and building: Locations on hilltops, near bodies of water, in deep valleys suggest design variations even for buildings in the same community.

As they point it up, the problem of weather and building is of particular significance to manufacturers of mass-market, prefabricated homes that must be sold in all sections of the country in standard designs—if customers are to receive the benefit of mass-production savings.

Here are the main conclusions the conferees reached:

1. Maximum conditions of humidity, snowfall on roofs, wind velocity, etc., should govern design factors rather than five-year mean conditions; "design for the worst conditions," was the prevailing opinion.

2. Method of installing roofing is the most important factor affecting durability; even the most resistant materials soon fail when the roof is not properly laid.

3. Condensation difficulties are not encountered mainly in the North, as has been generally accepted. Trouble is widespread wherever high humidities are encountered—in the relatively mild Pacific Northwest, for example.

4. Present-day buildings are not designed to get the benefit of natural ventilation on warm days under conditions of low wind velocities.

5. Many buildings are equipped with large and wasteful heating plants because former design philosophy was based on the need for comfortable heating at minus 5° F with average wind of 15 miles per hour; usually much lower wind velocities accompany such low temperatures.

Tariff Cut Fight Organized

OPPOSITION to projected further cuts on imported goods will be much

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more vocal this year than on previous occasions when new reciprocal trade treaties were about to be negotiated.

Because the trend toward lower volume of exports and an increasing invasion of foreign goods, many industries, their spokesmen in Washington say, are worried over administration plans to grant fresh concessions.

How the wind is blowing was demonstrated at a recent meeting at the Mayflower hotel, Washington, when management and labor representatives of 17 industries formed a National Labor-Management Committee on Foreign Trade Policy for the specific purpose of fighting proposals for further tariff cuts. These industries produce gloves, aluminumware, canned goods, glassware, pottery, matches, wallpaper, photoengravings, kaolin, glass containers, millinery, scientific apparatus, shingles, books, hot-house vegetables.

Consider Concessions—State Department's Trade Agreements Committee is expected to publish in April a list of the products on which new tariff concessions will be considered. In May the Committee for Reciprocity Information will hold open hearings to allow all interested manufacturers and others to state their views. Among groups that are expected to protest against contemplated tariff reductions is the steel industry which is concerned with current offers of European finished rolled steel at $20 to $30 a ton under domestic prices delivered at Atlantic Coast points.

The Committee for Reciprocity Information has established headquarters in the Tariff Commission building, Washington. Lynn R. Edminster, vice chairman of the Tariff Commission, is chairman of the committee. Edward Yardley, also with the Tariff Commission, is executive secretary.

More Aid for Small Business

THE GOVERNMENT is continuing its help to small businessmen:

For those who sell their products abroad, the government has compiled a three-volume directory of European importers. American businessmen can get the directories by writing the Economic Cooperation Administration, 800 Connecticut Ave. N.W., Washington 25. The importers are listed in accordance with the products they bought from the United States during May, June and July, 1949.

Volume I, lists European importers of food, feed, fertilizer, fuel, lubricating oils, tobacco, machinists' and other hand tools and cutting tools, metal containers, miscellaneous manufactures of iron and steel, scientific and professional instruments, rubber and rubber products.

Volume II lists importers of raw materials and semifinished products of great diversity including iron and steel mill materials, steel mill products, ferroalloys, aluminum and aluminum base alloys and aluminum products, copper and copper products, lead and lead base alloys and their products, nickel and nickel base alloys and their products, tin and tin base alloys and their products, zinc and zinc base alloys and their products, miscellaneous industrial nonferrous metals and their products.

Volume III lists importers of machine tools, metalworking machinery, agricultural equipment, generators and motors, electrical apparatus, engines and turbines, construction and mining and conveying equipment, office machinery, motor vehicles and accessories, tractors, aircraft parts, railroad transportation equipment, vessels, and miscellaneous vehicles and parts.

AEC Moves Branch

RADIATION INSTRUMENTS Branch of the Atomic Energy Commission, the unit that co-ordinates instruments within the commission and works with the instrument industry, has been moved from Oak Ridge, Tenn., to the commission's headquarters in Washington.

The radiation instruments industry is reported to have grown in the past three years from ten to more than 60 companies, and to be doing an annual business, currently, of about $4 million.

Johnson Practices Economy

DEFENSE SECRETARY Louis Johnson continues to make a wholesome showing in reducing civilian employment in his department, but other departments and agencies are still expanding their payrolls.

Defense civilian employees were reduced by 9246 in December, but nearly 50 per cent of this saving was nullified by an increase of 4443 elsewhere. Due to reductions totaling 125,312 by the military over the last six months, total government civilian employment at end of December was 1,918,156, lowest since 1942. But military civilian employees still numbered 759,416.

★★★★★★★★★★★★CAPITAL COMPASS★★★★★★★★★★★★

UNCLE SAM'S perennial best seller —the Statistical Abstract of the United States—is on sale again: The new edition contains all available statistical information about U. S. economy, population, cost of government, housing, commerce, foreign trade, vital statistics, etc. It is bigger than ever—1122 pages and 1102 statistical tables. You can get buckram-bound copies at $3 each from the Superintendent of Documents, Government Printing Office, Washington 25 . . . The National Security Resources Board is offering free a booklet on "Damage from Atomic Explosion and Design of Protective Structures." Of special note are suggestions it makes on steelmill buildings. The Atomic Energy Commission prepared it. If you want one, write to NSRB, Washington 25. . . .

"How To Sell to the United States Army," another new pamphlet is offered free from the Procurement Information Service, Department of the Army, Room 3D745, Pentagon, Washington 25. The pamphlet contains a directory of Army procurement offices and a list of items bought by the Army. . . .

Further swing of Yugoslavia away from the Iron Curtain group is reflected in signing of a contract under which that nation will exhibit its wares at the first U. S. International Trade Fair, in Chicago, Aug. 7-19, 1950. Western European countries, acting through the Organization of European Economic Cooperation, are co-operating to insure maximum representation from the Marshall Plan bloc. . . .

Under the new Public Law 105, providing $40 million for advance planning of public works and acquisition of sites, a total of 462 projects has accumulated on the reserve shelf of General Services Administration. Biggest project is a New York City barge office to cost $6.3 million. Most of the others are post offices.

Subject to Senate approval, William Webster, 49-year old executive vice president, New England Electric System, is the new chairman of the Research and Development Board, succeeding Dr. Karl T. Compton. . . . Chairman of the new North Atlantic Military Production and Supply Board is the Munitions Board's chairman, Hubert E. Howard. The former board's secretary is Thomas E. Drumm Jr., Newark, N. J., lawyer; he has established headquarters in London. . . .

A bill to remove inequities among creditor rights in bankruptcy proceedings is in conference to smooth out differences between House and Senate versions.

World Business Activity Erratic

Prospect of political change has no apparent effects on British industrial weather, but the instability of the Bidault cabinet hurts the French economy

NOW THAT industry is closely yoked to government in much of the world, what happens to business activity when there's a change—or one imminent—in the political climate?

The British elections are only three days away, but that has had no noticeable effect on U. K. industrial production.

The French pattern of political crisis—relieved only by the longevity of the Queuille government of September, 1948, to October, 1949—is in vogue again. Georges Bidault's ministry is hanging on by a gnat's hair. Popular confidence is waning and industrial output is also slipping.

In Western Germany, Konrad Adenauer's new government is steadily gaining strength. Improving industrial output mirrors the gains.

The new Australian conservative government is pulling a few rabbits out of the hat to aid business. One is a deal—involving no dollars—to purchase American tractors.

U. K. Production High

Despite the approaching elections, British industrial production continues at near-capacity levels.

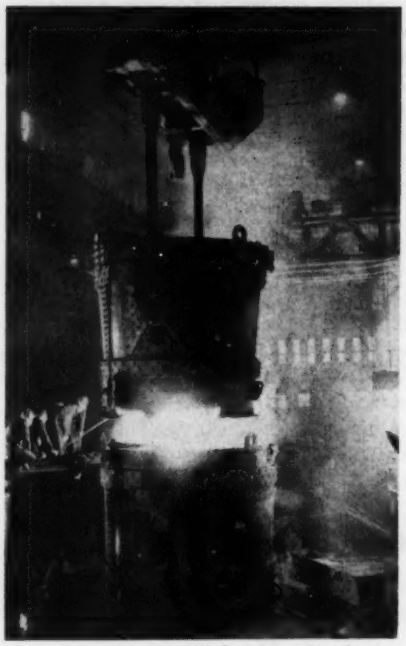
Steel ingot and casting output in January was at an annual rate of 17,737,440 net tons, compared with 16,802,240 tons in January, 1949. Pig iron production also improved; 102 blast furnaces are operating in the U. K. Automakers are demanding more sheet steel to keep up with high export schedules. Locomotive and freight car builders are working against more than a year's order backlog.

Even the ailing shipbuilding industry has a better pulse. Scotch yards have 950,000 tons of shipping on order. In January they were awarded five additional contracts for tankers; four of them from the hard currency area of South America. Last year the 30 Scotch shipyards launched 137 vessels of 530,493 gross tons, an increase of 90,000 tons over the 1948 total. Yearend estimates in 1949 indicated that the industry would fall far short of both the 1948 and 1949 levels this year.

Major overseas consumers of British products are the commonwealth countries, The Netherlands and Iran.

France Has Labor Problem

The French government has labor troubles. The Socialists still support Mr. Bidault's coalition, but they withdrew their five members from the ministry because of a dispute about bonuses to workers. Mr. Bidault remains as prime minister, but just barely.



Brit.sh Information Services

NEAR-CAPACITY LEVELS

. . . despite approaching elections

He narrowly survived another danger point when the National Assembly approved the 1950 budget after a two-month discussion. If the budget is followed, the French treasury will have a surplus for the year of 500 million francs or $1,430,000.

The Passy sur Arve power project built with Marshall Plan counterpart funds has begun. When completed the power plant will add 366 million kwhr annually to France's hydroelectric capacity. The project is one of 58 now underway in the hydroelectric program. The country is also planning an increase in its output of thermal electric power to offset future droughts like that of 1949.

The French merchant marine, which lost 408 vessels totaling 1,715,515 tons during World War II, has almost reached its prewar carrying capacity. The merchant fleet now totals 657 ships of 2,709,786 tons. An additional 14 ships are under construction or repair in French yards. Their combined tonnage is 108,716. France had 670 ships of 2,733,633 tons when war began in September, 1939.

The nation also has 17 ships being built for her in foreign yards—two in Great Britain two in Belgium, two in Denmark, nine in the Netherlands and two in Japan.

Ruhr Government Gains

West Germany's budget for the fiscal year ending Mar. 31, 1950, will be balanced. Thanks to government action, capital investment in Ruhr industry is increasing. Much of it comes from the German counterpart of the American RFC.

Because of these developments, Ruhr metalworking executives expect no sales difficulties at least for the short term. Economic trends and limitations placed on overseas trade by Allied authorities are combining to force all industry to depend on domestic markets. This may turn out to be a boon, not a handicap. While the rest of Europe is competing fiercely for exports, Germany may have time to build up excellent and more stable home markets. Not that exports are being ignored altogether. The auto industry, particularly Volkswagen, depends on them; 1300 Volkswagens were exported in January. The iron and steel scrap dealers also rely on overseas sales.

Scrap prices have tumbled lately because of declining exports and an oversupply at home. Dealers have arranged for ten months' credit extended to German scrap consumers so they can buy the material and save the market from complete collapse.

A fight is brewing on the German customs laws. The old setup based on weights and quantities will be replaced by an ad valorem system. Steel users want the steel tariffs lowered when the changes are completed. They are opposed by steel men who thus far seem to be winning the argument. The major ferrous import into Germany is steel bars.

U. S. To Equip Italian Mill

Westinghouse Electric Corp. has been awarded a $400,000 contract by E. W. Bliss Co., Toledo, O., for motors and auxiliary equipment for a new rolling mill destined for Italy.

Westinghouse will supply the main driving motors and auxiliary electrical equipment for the single-stand strip mill Bliss is building for Cantieri Metallurgici Italiani, of Catellammare, Di Stabia, Italy. The mill is designed to serve either as a cold-reducing unit or as a nonreversing temper pass mill. A motor generator set, driven by a 2700-hp motor, will

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provide current for the driving motors. The electrical equipment for the new mill will be completed by October, 1950.

Aussies Buy U. S. Tractors

American heavy tractors worth $1.5 million will be imported into Australia without dollar payment. It's not done with mirrors; it's done with the agreement by the new Australian government that International Harvester Co. will take payment for its products in additional shares in its Australian subsidiary. Much of the machinery will be used for road-building and other construction work.

This deal was proposed to the former Labor government, but refused. The arrangement has been used in other parts of the world, but never before in Australia.

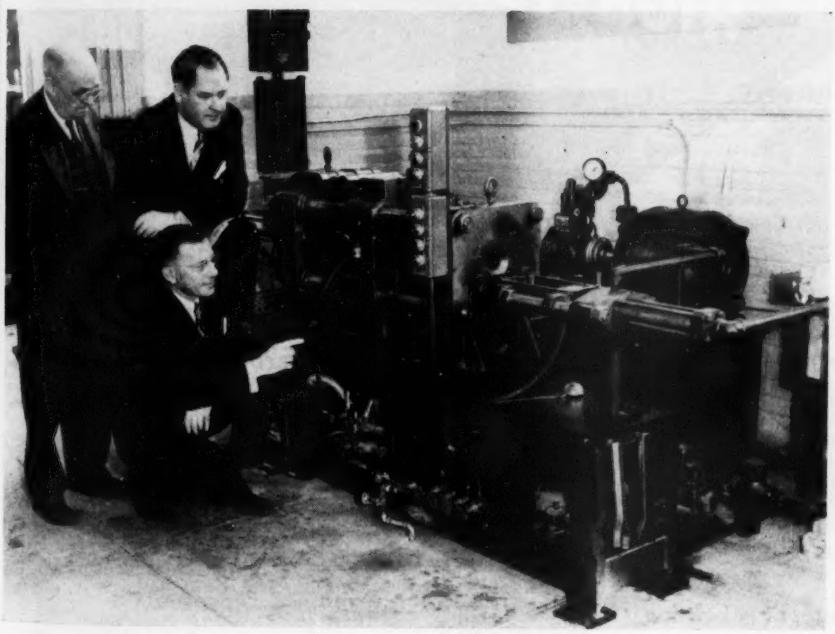
By 1956 the largest power station operating in Australia will be that of the State Electricity Commission of Victoria, at Yallourn. A $58.5 million expansion program will be completed by then, to boost Yallourn's output to 2.5 billion kwhr of energy per year. Two new boiler houses will be built. The mill-firing method of combustion, which has been developed in Germany, will pulverize the coal. The coal will then be blown into the furnace chambers. Each of the new turbo-generators to be installed will be of 50,000 watt capacity.

Film Shows Blast Furnace Action

SPECIAL feature of this year's annual winter meeting of the Eastern States Blast Furnace & Coke Oven Association will be the first large-scale showing of a high-speed motion picture of physical reactions inside the hearth of a blast furnace. The meeting will be held Feb. 24 at the William Penn Hotel, Pittsburgh.

The motion picture was taken by Robert A. Buchanan, photographer of the Research Laboratory, U. S. Steel Corp.

Doehler-Jarvis Sends Its Machines to College



DIE CASTING MACHINES are going to college.

H. H. Doehler, chairman of the board of Doehler-Jarvis Corp., New York, last week revealed details of his company's 1949 "University Program." In its first year it covered donation of fully equipped die casting machines to four outstanding schools of technology: Massachusetts Institute of Technology, Cambridge, Mass.; Rensselaer Polytechnic Institute, Troy, N. Y.; Case Institute of Technology, Cleveland; and Illinois Institute of Technology, Chicago. The initial appropriation for the program by the company this year is $50,000.

The type of machines presented to institutions to keep them "abreast of modern developments and trends" were the cold chamber type. They have been installed and projected into laboratory use by the schools. Equipment donated included dies and a supply of metal for use in classes.

In the picture, F. J. Koegler, executive vice president of Doehler-Jarvis, center, explains the operation of the unit to Dr. K. H. Donaldson, left, head of the Metallurgy Department, and President T. Keith Glennan of Case Institute of Technology.

CALENDAR OF MEETINGS

Feb. 20-21, American Material Handling Society, Indianapolis Chapter: Materials handling conference sponsored jointly with Purdue University, at Lafayette, Ind.

Feb. 24, Eastern States Blast Furnace and Coke Oven Association: Meeting, Hotel William Penn, Pittsburgh.

Feb. 24, Malleable Founders' Society: Western sectional meeting, Drake Hotel, Chicago. Society headquarters are in the Union Commerce Bldg., Cleveland.

Feb. 27-Mar. 3, American Society for Testing Materials: Committee week and spring meeting, Hotel William Penn, Pittsburgh. Society headquarters are at 1916 Race St., Philadelphia.

Feb. 28-Mar. 1, Chamber of Commerce of the United States: National marketing conference, Hotel Book-Cadillac, Detroit. Chamber headquarters are at 1615 H St., Washington.

Mar. 2-4, Society of the Plastics Industry, Pacific Coast Section: Annual conference, Hotel Del Coronado, San Diego, Calif. Society headquarters are at 295 Madison Ave., New York.

Mar. 3, Malleable Founders' Society: Eastern sectional meeting, Hotel Commodore, New York. Society headquarters are in the Union Commerce Bldg., Cleveland.

Mar. 6-10, American Road Builders' Association: 47th annual meeting, Netherland Plaza Hotel, Cincinnati. Association headquarters are in the International Bldg., Washington.

Mar. 8, American Society for Testing Materials, Philadelphia District: Meeting on air pollution, Philadelphia. Society headquarters are at 1916 Race St., Philadelphia.

Mar. 10-11, American Foundrymen's Society, Ohio Chapters: Regional conference, Cincinnati. Society headquarters are at 222 W. Adams St., Chicago.

Mar. 14-16, Society of Automotive Engineers: Passenger car, body and production meeting, Hotel Book-Cadillac, Detroit. Society headquarters are at 29 W. 39th St., New York.

Mar. 16-17, Pressed Metal Institute: Technical symposium on cold extrusion of steel, Hotel Carter, Cleveland. Registration fee is $5 for anyone interested. Institute headquarters are at 13210 Shaker Sq., Cleveland.

Mar. 20-25, Concrete Reinforcing Steel Institute: Meeting, at The Shamrock, Houston. Institute headquarters are at 38 S. Dearborn St., Chicago.

Mar. 21-22, Steel Founders' Society of America: Annual meeting, Edgewater Beach Hotel, Chicago. Society headquarters are in the Midland Bldg., Cleveland.

Mar. 22-23, Malleable Founders' Society: Market development conference, Evanston, Ill., in co-operation with Northwestern University. Society headquarters are in the Union Commerce Bldg., Cleveland.

Mar. 24, Malleable Founders' Society: Western sectional meeting, Drake Hotel, Chicago. Society headquarters are in the Union Commerce Bldg., Cleveland.

Mar. 28-31, Society of the Plastics Industry: Fourth national plastics exposition, Navy Pier, Chicago. Society headquarters are at 295 Madison Ave., New York.

Mar. 29, Material Handling Institute Inc.: Meeting, Hotel Cleveland, Cleveland. Institute headquarters are at 1108 Clark Bldg., Pittsburgh.

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This "new arithmetic in steel" is helping scores of manufacturers. They are taking advantage of N-A-X HIGH-TENSILE'S greater strength and corrosion-resistance to reduce sections an average of 25%—and still provide greater strength and durability than can be obtained with thicker sections of mild-carbon steel.

At a time when America must make full use of its steel-producing capacities and conserve its natural resources, the trend to N-A-X HIGH-TENSILE has national significance. Each ton produced represents a potential 33% increase in finished goods of superior quality. Investigate the opportunity to make each ton of sheet steel go farther—through the superior quality of N-A-X HIGH-TENSILE.

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By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Auto dealers air woes at Atlantic City convention, but get little sympathy from either customers or factories. Bootlegging of new cars below list prices No. 1 worry

DETROIT

AUTOMOBILE dealers do not echo the happy talk of most manufacturers over the sales outlook. In fact many are becoming a little apprehensive to judge from the tone of the recent Annual Dealers' convention in Atlantic City.

The association's retiring president, George Ziesmer, assessed today's market conditions as a "terrific transition period" and released results of a poll of better than 12,000 dealers indicating more than a little concern over merchandising problems.

Cars Bootlegged Below List—No. 1 bugaboo seems to be the matter of "bootlegging" new cars. It is in strange contrast to conditions only a couple of years ago when new cars were bootlegged at fancy prices. Now they are being bootlegged at below list, according to 42 per cent of dealers replying in a nationwide survey.

The pitch is this: A dealer in a northern state may decide he has a few too many new cars for a comfortable financial position, so he sells them to a southern broker or "bootlegger," if you will, for say $100 over his cost provided the broker agrees to take the cars home for resale. This the broker does, after which he tacks on another couple hundred dollars for his own profit and still is able to sell a brand new car for a hundred dollars or more off the list price.

Dealers Want Protection—Naturally local dealers handling whatever make of car is involved are putting up a terrific howl and demanding factory protection against such nefarious goings-on.

For their part, factories have been moving away from territorial protection in dealer franchises, presumably on the hunch Federal Trade Commission might be planning to crack down on such clauses as a restraint of trade. So dealers seem to be left open to raiding from outside their territories and as the market contracts they don't like it. When demand far outran supply, territorial confinement was irksome. Now it is welcome.

Other Gripes Too — Dealers have other complaints against their factories, engendered by the shift to a buyer's market. Most of them want advertising charges included in delivered prices. They have to spend too much time preparing new cars for delivery to customers, and they are not compensated for this burden. They are not compensated adequately for labor involved in warranty replacements. They want factories to participate financially in model cleanups. They want factories to "take steps" to correct bootlegging, while at same time dealers themselves admit to bootlegging competitive makes of cars.

Little Sympathy—No one is feeling too sorry for automobile dealers, whether a customer or a manufacturer. For the past ten years, even during the wartime stoppage of new car production, the gravy train has been rolling, and if it is now pulling into the station, many will say it is high time. Prewar, dealers historically lost money on new car business because of trading away most of their discount by overallowances on used cars. Now that they realize this technique may have to be revived (it would be a quick way to arrest "bootlegging" practices), the prospects of glimmering profits are bringing the shudders. Speaking generally, there are probably too many in the business now, at least too many who are not experienced in good business management. A lot will be washed out in the next few years.

Strikes May Bring Readjustment—The tragic impasse in the coal industry, together with a continuing stalemate in Chrysler-UAW negotiations which is keeping an estimated 135,000 wage earners idle, may prove to be nuclei around which an overdue economic setback in automobiles will grow. There are the aforementioned warning signals from automobile dealers. There is the suspension of all overtime and Saturday work by General Motors divisions which will trim weekly car and truck output by about 5000. There is the shift by Packard to a 4-day week, starting three weeks ago. There are the recent price cuts by Studebaker and Hudson. Little things by themselves, they could add up to a significant trend.

Veteran sales officials scoff at such reasoning. They add dealers could well build up their stocks of new cars to two or three times the present level if they expect to keep abreast of a lively spring selling season. All well and good, of course, if there is to be a lively spring selling season.

—Auto, Truck Output—

U. S. and Canada

	1950	1949
January	620,000*	445,092
February		443,734
March		543,711
April		569,728
May		508,101
June		623,689
July		604,351
August		678,092
September		657,078
October		601,021
November		474,726
December		378,834
Total		6,528,157

Weekly Estimates

Week Ended	1950	1949
Jan. 28	141,036	116,471
Feb. 4	127,428	102,981
Feb. 11	130,640	108,911
Feb. 18	125,000	114,207

Estimates by Ward's Automotive Reports

* Preliminary.

Ford Expands Canton Output

THREE new forged parts—spindle supports and steering arms for Mercury and transmission sliding gears for the Ford tractor—have been added to the production schedule of the company's Canton, O., forge plant, tacking 60,000 lb to the present daily output of 1 million pounds. A fourth new part—truck ring gears for service—shortly will mean another 36,000 pounds daily.

Chicago Dealers Stage Show

THE CHICAGO Automobile Dealers' Show opened with a fanfare last Friday night and took on all the aspects of a national show. Elaborate preparations have been under way for months to drum up interest in the presentation at the International Amphitheater which is calculated to draw 400,000. Exhibits were arranged by all makes of passenger cars,

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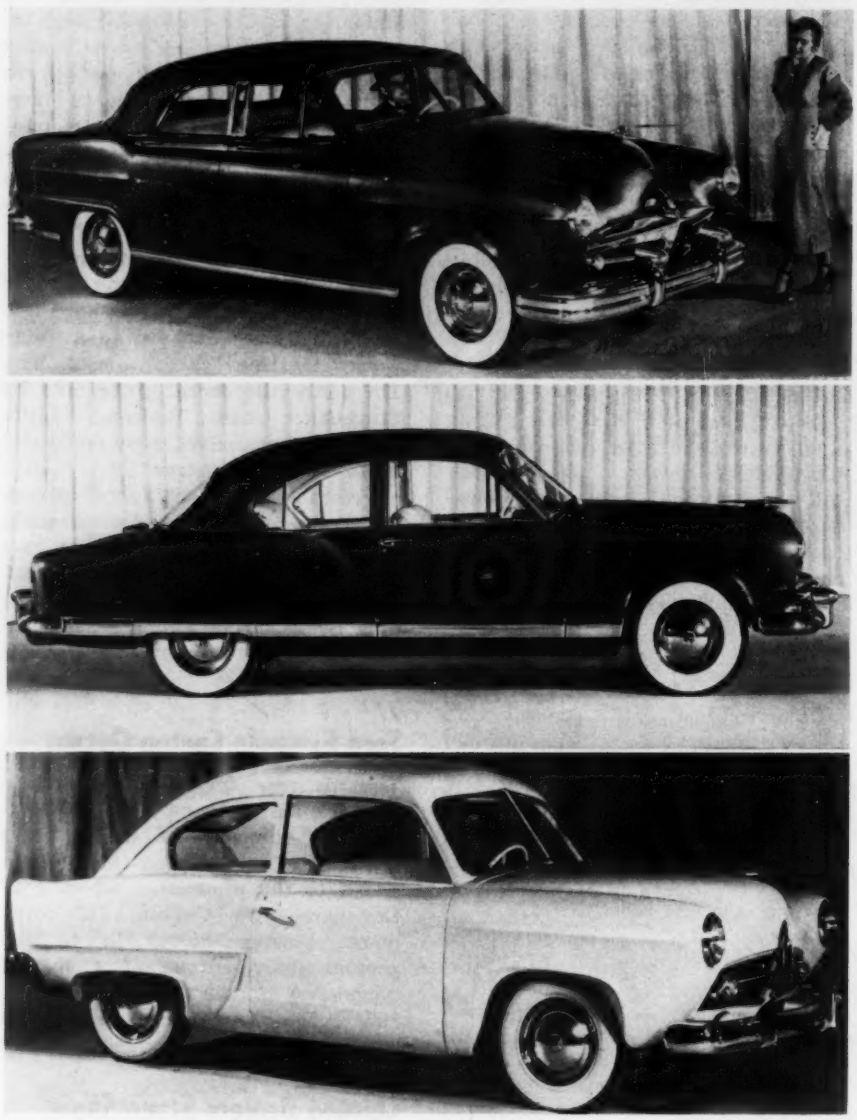
practically all makes of trucks, commercial trailer and body manufacturers and parts and accessories suppliers. The show is sponsored by the Chicago Automobile Trade Association, not by manufacturers, although it is understood most of the latter underwrote the cost of exhibit space. The entire hall area of 155,207 sq ft was sold out.

K-F Shows Three New Lines

KAISER-FRAZER was there making a strong bid for the spotlight, showing its three new lines of cars for the first time, a month ahead of the start of production. A group of about 40 Detroit auto writers was flown over to the show and back by K-F, with a trip to the exhibit and other special events on the calendar.

There was general agreement that K-F had rung the bell with its styling of the 1951 line, which breaks sharply from anything offered in the past. Curves are the keynote of the Kaiser, from the "sweetheart" curves of windshield and rear window to the "gull wing" dips of the body sides and the "cascade" back treatment. Glass area of 3541 sq in. is claimed to be the largest for any sedan now built. The line includes two-door sedans, four-door sedans, coupes and utility sedans, built in Standard or Deluxe versions and furnished either with or without hydra-matic drive.

A new type of mounting for side glass brings it nearly flush with exterior body panels, while upper edges of doors are run into the roof slightly to permit easier entrance and exit. Engine is a redesigned 115-horsepower, 6-cylinder Continental type, with reinforced block, 100 per cent counterbalanced crankshaft, hydraulic damper, mushroom tappets, precision balanced pistons carrying chrome-plated upper rings, and a sealed cooling system. Distinctive feature of interiors is the use of a full-padded crash panel just below the windshield and above the instrument clusters. There was some speculation over the actual safety value of this padding, since in a sudden stop the occupants' heads usually strike the windshield glass, while their knees collide with lower edge of the steel instrument panel.



A STRONG BID FOR FOR THE SPOTLIGHT

. . . with "gull wing" dips, "sweetheart" curves and "cascade" backs

All New—The 1951 Frazer is completely new and will include a four-door sedan, utility sedan, convertible and "hard top" convertible, the latter sporting a nylon-covered steel roof panel. A distinctive feature is the center pillar post of heavy chrome-framed safety plate glass. A massive front grille, somewhat similar to that of the Kaiser, is designated as the wind-tunnel type with two airfoil center vanes housing the parking lights at their tips. Fender noses and hood jut forward Studebaker-fashion to create the impression of forward motion. Rear fenders are crowned by oversize tail lamps with columnating lens and built-in reflectors. Hood ornaments are standards on both Kaiser and Frazer, after an unsuccessful attempt to convince the public of their superfluousness.

Crossed Fingers—Consensus on the Kaiser low-price cars, scheduled for production in June, is a matter of crossed fingers. It is a two-door sedan with low silhouette, seating five and stripped down to the bare essentials. However, it carries out the family lines of its big brothers and is stiffened up by such things as embossed body side panels and wheel cutout flanges. Except for grille, bumpers, handles and headlights rims, chrome trim is out. Two engines options will be available, either a four or a six, both built by Willys and delivering gasoline economy of 30-35 miles per gallon. Company officials say the model culminates seven years of experimental work with more than 50 prototypes. Tests were made on engines ranging from 10 to 100 horsepower, arranged for front wheel drive, rear mounting and conventionally. Work was carried out on alternate materials for body structures, such as aluminum, magnesium, plastics and wood, the conclusion finally being reached that the public wants nothing radical or revolutionary, and certainly nothing "small." Carrying a price equivalent to that of a year-old model in the present low-priced volume field, which would make it around $1150, the project remains a question mark. At any rate, it is going to get plenty of promotional push.

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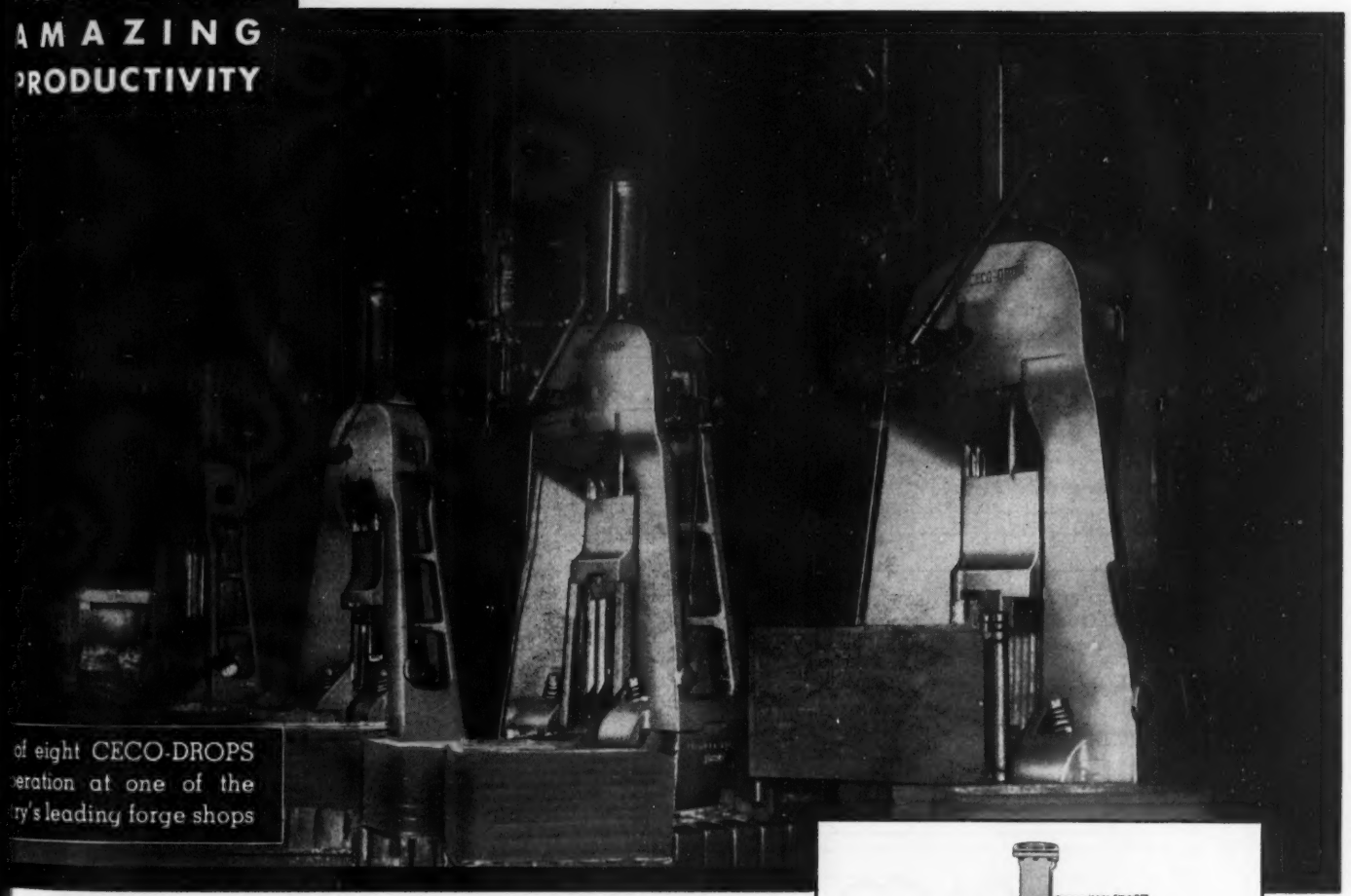
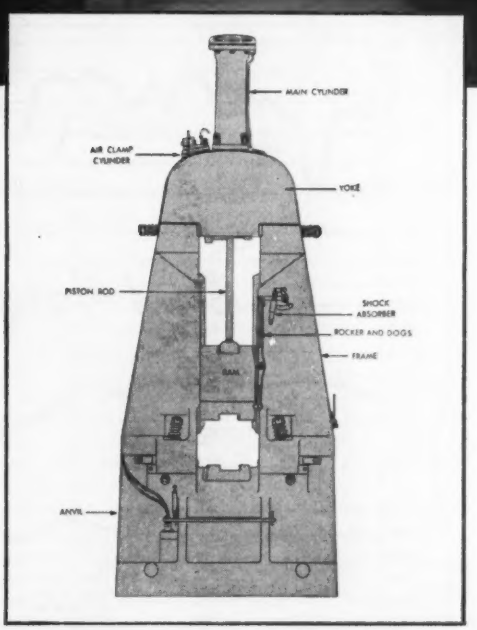
CECO-DROP

The Boardless Gravity Drop Hammer

REORDERS AND MULTIPLE INSTALLATIONS PROVE ITS AMAZING PRODUCTIVITY



of eight CECO-DROPS
eration at one of the
ry's leading forge shops

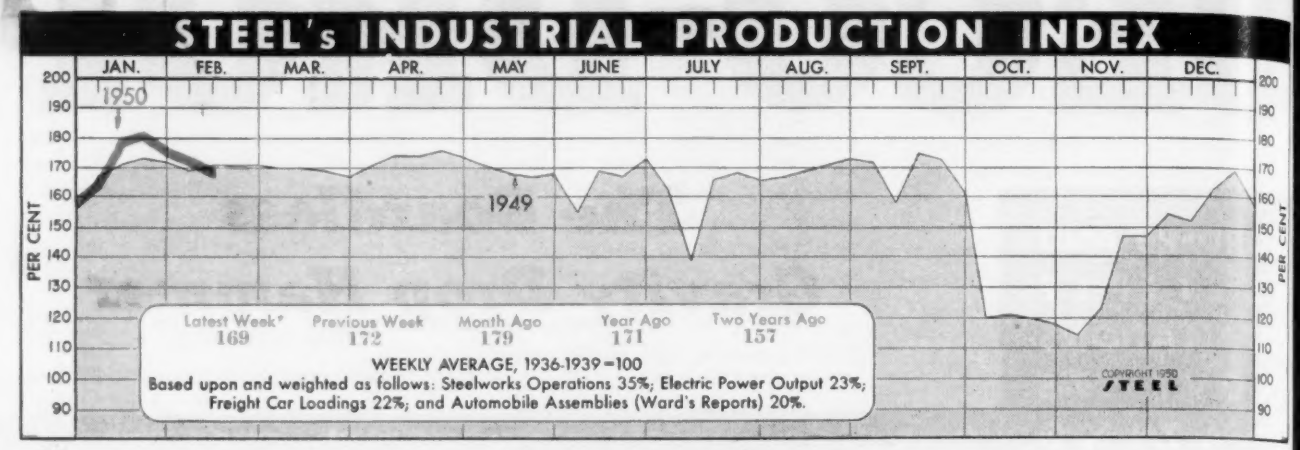


Costs less to operate . . .
Forges more minutes per hour . . .
Safer and easier to operate . . .

No Boards • No Front Rod • No Back Rod

This hammer is setting new records in cutting forging costs and in increasing production. Write for details.

CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA.


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
1950
1949
PER CENT
Latest Week* 169
Previous Week 172
Month Ago 179
Year Ago 171
Two Years Ago 157
WEEKLY AVERAGE, 1936-1939=100
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.
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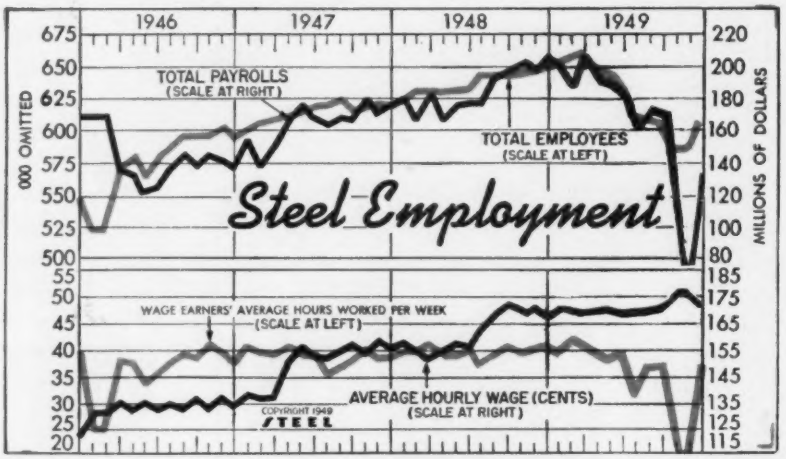
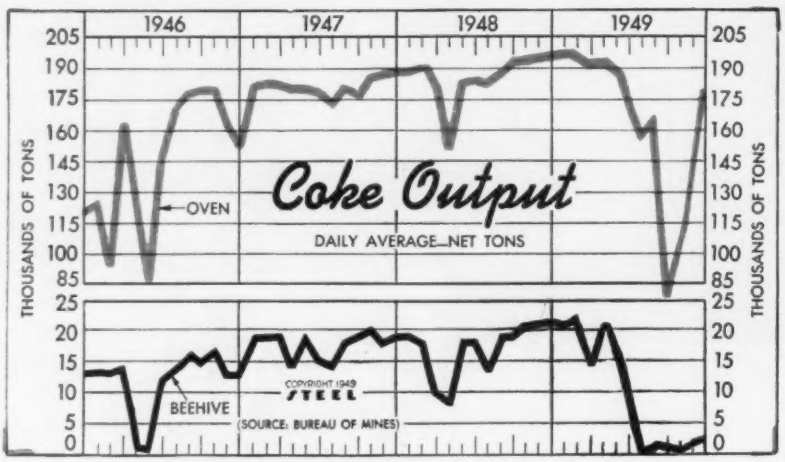
* Week ended Feb. 11 (preliminary).


1946 1947 1948 1949
000 OMITTED
MILLIONS OF DOLLARS
TOTAL PAYROLLS (SCALE AT RIGHT)
TOTAL EMPLOYEES (SCALE AT LEFT)
Steel Employment
WAGE EARNERS' AVERAGE HOURS WORKED PER WEEK (SCALE AT LEFT)
AVERAGE HOURLY WAGE (CENTS) (SCALE AT RIGHT)
COPYRIGHT 1949 STEEL

Steel Employment

	Employees† (000)		Total Payrolls (millions)		Hourly Wages† (cents)	
	1949	1948	1949	1948	1949	1948
Jan.	650	622	$202.1	$180.2	171.3	157.3
Feb.	653	626	189.8	167.6	169.6	155.1
Mar.	652	629	207.2	183.0	168.5	154.8
Apr.	647	626	191.9	168.5	168.8	155.1
May	637	628	188.4	175.3	169.7	157.7
June	625	634	181.8	179.5	168.4	156.9
July	610	641	160.3	179.8	169.9	164.5
Aug.	603	645	175.6	193.8	168.2	168.9
Sept.	600	641	173.5	199.4	171.2	171.8
*Oct.	584	644	63.1	201.7	178.2	169.9
*Nov.	584	646	63.1	199.8	178.2	172.1
Dec.	602	648	136.9	205.8	170.6	169.4

† Monthly average. * Averages taken from single figure for the two strike affected months.

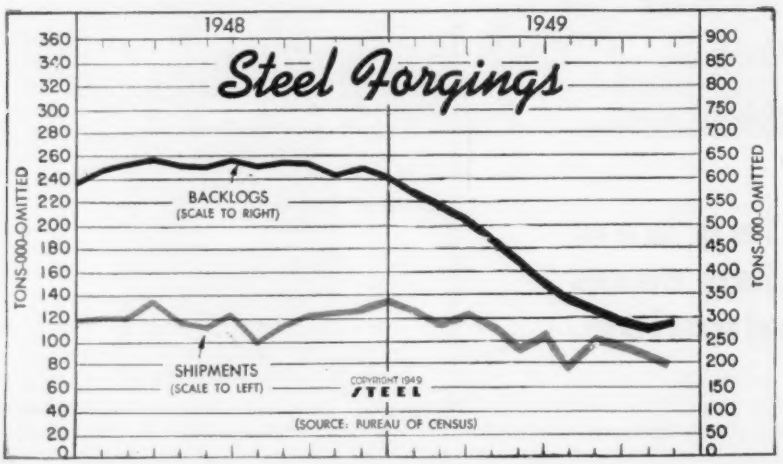


Coke Output

Bureau of Mines

(Daily Average Net Tons)

	Oven		Beehive	
	1949	1948	1949	1948
Jan.	196,000	189,191	21,209	19,588
Feb.	195,551	190,098	22,642	18,625
Mar.	192,183	182,340	14,324	10,485
Apr.	192,019	149,692	21,310	8,235
May	187,040	184,568	17,229	18,651
June	174,748	187,200	9,012	18,700
July	158,407	184,286	797	14,032
Aug.	165,733	188,468	1,511	19,751
Sept.	165,067	192,090	979	19,616
Oct.	55,718	192,440	272	20,083
Nov.	115,702	193,565	1,120	20,341
Dec.	178,643	195,670	2,580	20,588
Ave.	164,512	185,634	9,321	17,391



Steel Forgings

(Tons—000 omitted)

	Shipments*		Unfilled Orders*	
	1949	1948	1949	1948
January	125	118	571	618
February	111	117	540	631
March	120	131	504	641
April	104	114	465	628
May	92	109	412	624
June	101	119	377	639
July	70	97	348	625
August	96	111	312	634
September	88	121	294	631
October	81	123	280	604
November	73	124	287	619
December	...	132	...	601

* Forgings for sale.

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The Business Trend

COAL scarcity is responsible for growing tension in the industrial picture. Production cutbacks are on the rise and those companies that are maintaining schedules are not sure how long they will be able to do so.

If wholesale shutdowns result from fuel shortages, there will be some time lag before the nation's industrial plant gets back in stride. The predictions for first quarter output will fall short of their mark despite strong demand.

In the week ended Feb. 11 STEEL's industrial production index slipped another 3 points to a preliminary 169 per cent of the 1936—1939 average. This is the third consecutive decrease since the high for the year was set in the week ended Jan. 21.

AUTOMOBILES—Fuel conservation measures coupled with the Chrysler strike are putting a further dent in automotive output. Up to Friday Feb. 17 an estimated 115,000 vehicles were lost because of the Chrysler strike. General Motors, the industry's biggest producer, is assembling below schedules set at the start of this year in order to conserve fuel. Ford and the independents may soon follow. In the week ended Feb. 11 outturn was 130,640 passenger cars and trucks, up more than 3000 units from the preceding week's 127,428.

STEEL—Last week's small decline in the steelmaking rate will be followed by further and more serious cutbacks in the weeks to come unless the coal situation improves rapidly. What were ample coal stocks at the start of the year have melted to shadowy proportions. February's steel production will be down substantially from January's 7,904,585 tons. The steelmaking rate in the week ended Feb. 11 was 91.5 per cent of capacity, down 2.5 points from the preceding week.

POWER—The mountainous coal stockpiles normally carried by the electric power companies have enabled them to sustain operations at high levels. While living "off their fat" the nation's light and power companies set an alltime weekly record in the week ended Feb. 4. Edison Electric Institute says total output that week reached 6,062,095,000 kwhr.

FREIGHT CARS—Awards and backlogs both turned upward in January after declining through all 1949, bearing out predictions that some revival is in sight for what had been a sickly industry. January's new orders were 9385 cars or about 3000 more than in all 1949. Backlogs at the end of January were 19,026 cars, compared with 12,036 a month earlier and 96,464 a year ago. Deliveries are down. In January they totaled 2395. The 1949 average was 7700 cars per month.

CONSTRUCTION — Civil engineering construction contract awards averaged $229 million weekly in January, 62 per cent above the like period last year and 69 per cent above the average for all 1949. Awards for the first six weeks in 1950 total $1218 million. Private awards for the period were $588 million and public awards were $630 million.

BAROMETERS of BUSINESS

		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	91.5	94.0	94.0	100.0
	Electric Power Distributed (million kilowatt hours)	5.971	6,062	6,029	5,722
	Bituminous Coal Production (daily av.—1000 tons)	1,092	1,250	938	1,898
	Petroleum Production (daily av.—1000 bbl.)	4.951	4,945	4,925	5,387
	Construction Volume (ENR—Unit $1,000,000)	$141.9	$160.7	$193.5	$131.2
	Automobile and Truck Output (Ward's—number units)	130,640	127,428	154,552	108,911
	*Dates on request. †1950 weekly capacity is 1,906,267 net tons. 1949 weekly capacity was 1,843,516 net tons.				
TRADE	Freight Car Loadings (Unit—1000 cars)	590†	613	631	699
	Business Failures (Dun & Bradstreet, number)	195	199	207	192
	Money in Circulation (in millions of dollars)‡	$26,985	$26,928	$27,311	$27,557
	Department Store Sales (changes from like wk. a yr. ago)‡	−1%	+2%	−25%	−4%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$14,364	$13,266	$13,907	$12,568
	Federal Gross Debt (billions)	$256.6	$256.8	$256.9	$252.5
	Bond Volume, NYSE (millions)	$18.3	$22.0	$37.0	$16.4
	Stocks Sales, NYSE (thousands of shares)	8,739	10,109	14,799	5,033
	Loans and Investments (billions)†	$67.3	$67.8	$67.2	$62.7
	United States Gov't. Obligations Held (millions)†	$37,595	$38,077	$37,514	$33,268
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index††	156.13	156.13	156.13	155.05
	STEEL's Nonferrous Metal Composite‡	160.1	160.1	161.2	232.6
	All Commodities†	151.6	151.2	151.4	157.0
	Metals and Metal Products†	169.3	169.5	169.5	175.8
	†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.				

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Machinery Builders Diversify

Equipment builders find new outlets in paper, textile, leather machinery. United Engineering expands Canton plant to increase facilities for making rolls for paper industry

MACHINERY and equipment manufacturers whose products historically have been directed to the steel and metalworking industries are seeking to diversify their lines. They increasingly are turning to textile, paper, leather, rubber, plastics and lumbering and woodworking machinery.

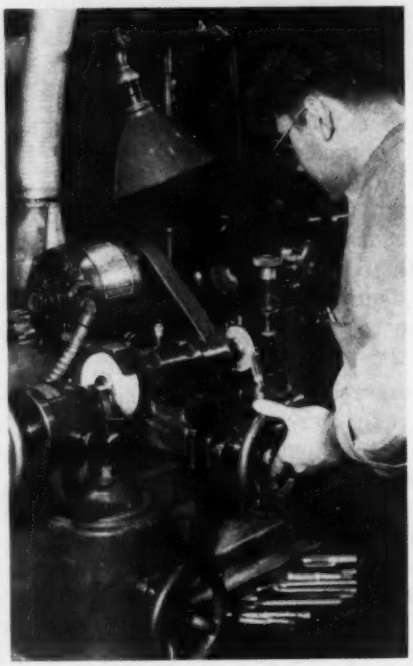
Partially the move is prompted by a desire to have a line which may be active when metalworking machinery is depressed. But they also want to increase their over-all output and to utilize more fully their facilities and know-how.

United Engineering & Foundry Co., Pittsburgh, last October bought Stedman Foundry & Machine Works Inc., Aurora, Ind., and the Lobdell Co., Wilmington, Del. The Stedman plant has a foundry division specializing in small gray iron and semisteel castings, and a machinery division which manufactures crushing, grinding, pulverizing, mixing, and screening machinery. The reduction machinery (crushing, grinding, and pulverizing) takes United far distant from steel mills with Stedman specializing in the building of fertilizer machinery. At Wilmington, paper mill machinery and paper and steel mill roll grinders are turned out.

Expands Canton Plant—Because of the Lobdell acquisition, United Engineering has gone a step further and decided to expend $600,000 to $700,000 on additional facilities for the production of iron rolls at its Canton, O., plant. The objective is improvement in its roll position in the paper mill field, but it is also indicated there has been increasing foreign and domestic demand for iron rolls for the rubber and plastic industries. United Engineering's expansion at Canton will add about 12,500 sq ft to company's present machine shop and shipping facilities. The new building is expected to be completed for operation within nine to ten months.

This addition, coupled with a modern research laboratory recently completed at a cost of $125,000, will make the Canton plant one of the best equipped iron foundry and roll manufacturing plants in the world.

The new building and machine tool acquisitions at Canton will be devoted mainly to grinding and other finishing operations on large rolls. Machinery required for these operations includes: Paper and steel mill roll grinders, special tools for drilling paper mill rolls, large engine lathe, and special roll-end finishing machine.



TAPPING TIP: One way to cut high production costs is to sharpen taps before returning them to the tool crib. Henry P. Boggis & Co., Cleveland, manufacturer of the Hybco tap grinder, says you can secure maximum tap life, less scrap and minimum down time by periodic tap grinding. Experience shows tap life is increased ten to fifteen times

To Build Leather Machinery—Aetna-Standard Engineering Co., Youngstown, also is seeking greater diversification through a "tie-in" with the Tanners Council of America wherein they jointly undertake to develop and build machinery for the leather industry. Aetna-Standard cites this a major step in an important basic industry, and adds that patents have been applied for on two machines—one for doing a dehairing and defleshing job, and the other, a buffing task. These two operations are the first steps in the preparation of hides and skins for finished products. Other machines to do various phases of leather finishing are contemplated.

E. W. Bliss Co., Toledo, O., purchased an interest in the H & B American Machine Co., Providence, R. I. The New England company makes textile machinery. Bliss builds presses, rolling mill equipment, can-making machinery and other metalworking machinery. The two companies are expected to operate independently.

Gary Gives Budd Green Light

GARY, IND., CITY COUNCIL gave Budd Co., Philadelphia, the go-ahead signal on its proposed plant on a 140-acre Gary site for a new automobile body parts plant (STEEL, Jan. 23, p. 28).

With full endorsement of the Gary Industrial Foundation and the Chamber of Commerce, the City Planning Commission approved the rezoning of the tract from apartment to a first industrial zone.

Manufacturing facilities in the $7 million plant will include sheet metal stamping presses and welding and assembling lines for stampings.

Irwin Plant Operations Begun

MANUFACTURING OPERATIONS at Westinghouse Electric Corp.'s new plant near Irwin, Pa., were begun last week.

T. I. Phillips, vice president of the company, says the plant will manufacture a new insulating product that never before has been made by Westinghouse. He did not disclose details. About 25 women will be employed initially. Eventual employment is expected to reach about 300.

Mr. Phillips says there are no plans at present to move any of the activities carried on at the East Pittsburgh, Pa., plant to the new location. The plant was acquired in March, 1948, as part of a $132 million long-range, company-wide expansion and improvement program. The property, located at Hahntown, two miles south of Irwin, was owned by General Foods Corp. and occupied by one of its divisions, Jersey Cereal Co. The four buildings on the 20-acre property are three-story buidings—all connected; they provide 125,000 sq ft of floor space.

Hydropress Takes Over

ROLLING MILL business of Loewy Construction Co. Inc., New York, will be operated as Loewy Rolling Mill Division of Hydropress Inc.

Erwin Loewy, president of both companies, says the increase of Hydropress' activities in design and construction of large rolling mill installations necessitated the arrangement.

Among other domestic and foreign installations the Loewy group has

on order a large blooming mill installation for Austria, two complete steel mills for Italy, two aluminum foil mills for France and one for Italy.

Thor Cutting Dealer Outlets

DEALER outlets for Thor Corp.'s home laundry appliances will be cut from 20,000 to a "highly selective" 7000 during 1950. The Chicago appliance maker has already notified distributors to streamline their dealer lists. The selective dealer organization will be backed with a $1,750,000 advertising and sales promotion program, the largest in Thor's history.

John R. Hurley, Thor president, says he is convinced the new program will improve his company's sales volume. He declares the mass distribution method of selling is proving detrimental to the entire major appliance and radio distributing picture.

Mass distribution was created by postwar shortages, he explains, and has led to many abuses from dealers in name only. Among these are flagrant price chiseling, neglect of proper sales efforts and disregard for service.

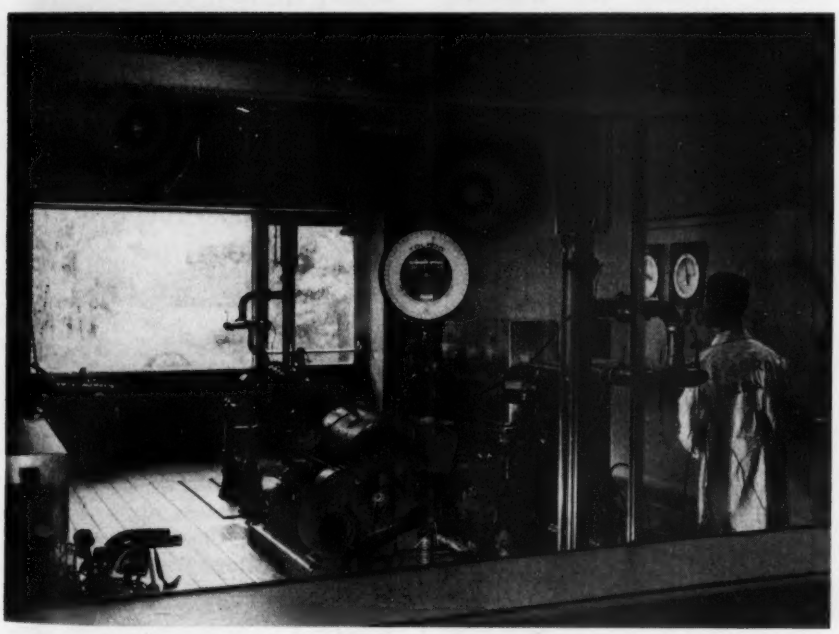
Thor has instituted an extensive sales seminar among all company and distributor sales personnel, has conducted comprehensive market studies of each sales territory, initiated aptitude testing and is producing sales training films.

New Firm Wire Rope Specialist

ESTABLISHMENT of Great Lakes Splicing & Supply Co.—it will specialize in fabrication of all types of wire rope slings, fittings and other cable assemblies—is announced by James R. Bryant, president.

The firm's headquarters are in Euclid, O. The company is an authorized distributor for wire rope produced by American Steel & Wire Co., Cleveland. David T. Hutton, vice president and treasurer of the new company is in charge of sales. He was associated with the American Steel & Wire sales organization in New York and Cleveland.

Ford's New Research Center Takes Shape



FIRST 15 soundproof test rooms of a new Ford engine laboratory, one unit of a large new engineering and research center taking shape at Dearborn, were shown to the press.

Each cell is equipped with a 250-hp amplidyne dc dynamometer, and there is another test room with a 250-hp dynamometer and a 600-hp induction-type dynamometer for transmission and torque converter study.

Ventilation system in the rooms is of the reverse flow type, with fresh air being forced downward through the room and out grating fore and aft each dynamometer base. Thus the engine heat, fumes and heavier gases are forced through the floor and carried away through an air waste tunnel by exhaust fans.

Eventually the laboratory will house 38 test rooms, including 32 engine and two transmission units, one carburetor flow stand room, two vehicle test rooms and one axle test room. All power requirements of the completed structure will be recovered from the 32 dynamometers.

Prestige, Privacy

E. I. DUPONT DE NEMOURS & CO. INC., Wilmington, Del., granted royalty-free, non-exclusive licenses to seven companies to manufacture its newly developed functional office furniture that offers an economical way of getting more office space.

Designs under DuPont's patent application for the development were made available for a token payment of $1 by the firms. The seven licensed concerns are:

Arnot & Co. Inc., Baltimore, Md.; Art Metal Construction Co., Jamestown, N. Y.; General Fireproofing Co., Youngstown, O.; Globe-Wernicke Co., Cincinnati; Gunn Furniture Co., Grand Rapids, Mich.; Korda Associates, New York; and Remington Rand Inc., New York.

Built into a complete working unit, the functional furniure carries its own partitions for prestige and privacy.

Engineers Study Water Problem

ENGINEERS' Joint Council, a group representing the combined national engineering societies, is tackling the problem of water.

The council believes that adequate conservation and development of the nation's water resources are unattainable under present unco-ordinated and frequently opposing policies. In mobilizing the engineering profession to attack the problem, the council is creating a Water Policy Panel to develop basic engineering principles which engineers can advocate for inclusion in a program for a sound national water policy. These concepts will be presented to President Truman's temporary Water Resources Policy Commission (see STEEL, Feb. 6, p. 60).

Suggestion Systems Get Scrutiny

BUSINESS FIRMS are revamping employee suggestion systems aimed at cost reduction as a result of recent ruling by Wage & Hour Administrator William R. McCombs.

He says that such plans sometimes violate the Fair Labor Standards Act by extracting employee overtime without adequate compensation.

Although the majority of companies are not in danger of violating the act. the necessity of reviewing suggestion plans can have a salutary effect in organizations with faulty suggestion systems.

Men of Industry

JOHN L. McGARA

John L. McGara has been appointed general manager of the Pittsburgh district operations of **H. K. Porter Co. Inc.**, Pittsburgh. He will have charge of sales and operations of the three Porter plants in the Pittsburgh district; the plant in Lawrenceville, Pa.; and the two plants of American-Fort Pitt Spring Division in Lawrenceville and in McKees Rocks, Pa.

—o—

John W. Hanes, former under secretary of the treasury, has been elected a vice president and director of **Olin Industries Inc.**, East Alton, Ill., and also was appointed to the executive committee of that corporation. **Berton E. Rogers** was appointed works manager of the Olin subsidiary, Winchester Repeating Arms Co. Division at New Haven, Conn.

—o—

J. M. Spangler, former director, vice president and general manager, **National Carbon Division** of Union Carbide & Carbon Corp., New York, has been made president of the division.

—o—

Fairbanks, Morse & Co., Chicago, announces that **J. C. Elmburg,** manager of the Atlanta branch, has been transferred to Portland, Oreg., to succeed **Howard Oxsen** as branch manager. Mr. Oxsen returns to San Francisco to be manager of diesel engine sales in that area. **George A. Hawkins** has been appointed Atlanta branch manager.

—o—

D. M. Berges has been appointed chief engineer, **Pesco Products Division,** Cleveland, Borg-Warner Corp. His appointment fills a vacancy in the engineering department organization which has existed since **J. A. Lauck's** election as vice president-engineering several months ago.

JOHN H. SMITH

John H. Smith has been elected president, **General Electric X-Ray Corp.,** Milwaukee, succeeding **John H. Clough,** who becomes chairman of the board of directors. Mr. Smith formerly was executive vice president. He also is president, and Mr. Clough chairman, of General Electric Medical Products Co., subsidiary, which has moved offices from Chicago to the Milwaukee plant.

—o—

John W. Wilkinson has been appointed general sales manager, **McKiernan-Terry Corp.,** New York. For the last 10 years he has been eastern field project engineer directing sales activity for Pomona Pump Division, Fairbanks, Morse & Co.

—o—

E. K. Brown has been appointed director of research for **Torrington Co.,** Torrington, Conn., and is succeeded as chief engineer of the Needle Bearings Division by **B. T. Virtue.**

—o—

Link-Belt Co., Chicago, announces that **H. Walter Regensburger** has been appointed chief engineer of its general engineering department to succeed **Harry L. Strube,** retired, and that the department has been transferred from Philadelphia to 301 W. Pershing Rd., Chicago. Assisting Mr. Regensburger will be **C. M. Young Jr.** as chief developmental engineer, and **H. F. Watson** as chief standards engineer.

—o—

Hollis I. Conner has been appointed assistant manager, export division, **Hyster Co.,** Portland, Oreg. He will serve as head of the Peoria, Ill., export department and as contact man between export headquarters in Portland and the two eastern plants.

ALBERT T. LAWSON

Albert T. Lawson has been elected to the newly created position of vice president—general services of **Jones & Laughlin Steel Corp.,** Pittsburgh, effective Mar. 1. Since 1947 he has been general superintendent of the Pittsburgh Works. **L. A. Lambing** was appointed to that position, succeeding Mr. Lawson.

—o—

David Dillman will become manager of public relations of **Inland Steel Co.,** Chicago, effective Mar. 15. He has been managing editor of the *Chicago Journal of Commerce.*

—o—

Clausen Iron Co., Albany, N. Y., announces appointment of **Nola E. Clausen** as assistant secretary, and the following as heads of departments: **F. B. Dennison,** drafting and engineering; **R. C. Robertson,** purchases and sales; **Frank J. Bruno,** shop production; and **Philip S. Seils,** steel erection.

—o—

Eric A. Flaschar has been elected president of **Stacey Bros. Gas Construction Co.,** Cincinnati, to succeed **W. E. Gruening. Arthur E. Harvey** was promoted from vice president to executive vice president, and **H. C. Brinkman,** chief engineer, was elected vice president of Stacey Bros., subsidiary of Dresser Industries Inc.

—o—

E. L. Mathy has been appointed sales and advertising counselor for **National Welding Equipment Co.,** San Francisco. He was vice president and director of Victor Welding Equipment Co. for the last 20 years.

—o—

J. F. Scroggins, formerly executive vice president, has been elected president, **Decatur Iron & Steel Co. Inc.,**

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That, briefly, sums up the experience that led Anemostat Corporation of America, New York, to switch to SPEED NUTS. This decision was the end result of a recent review of production and assembly costs on their draftless air diffusers.

Cost of the previous assembly method was compared with the new SPEED NUT method. As a result, *SPEED NUTS were specified, and are currently producing 50% lower material costs and substantial assembly savings.*

What about your product . . . isn't there a fastening job that multiple-function SPEED NUT brand fasteners can do better, more economically? Find out NOW. Also, write for your copy of "SPEED NUT Savings Stories". TINNERMAN PRODUCTS, INC., 2040 Fulton Road, Cleveland 13, Ohio. In Canada: Dominion Fasteners Limited, Hamilton.

OLD METHOD
SPEED NUT METHOD
Previous method of assembling fixing stay on diffuser, using five parts: Machined metal block was riveted to back of top louvre with two rivets. Shoe supporting stay was then attached by screw.
SPEED NUT method, using three parts: Special SPEED NUT is snapped into position by hand, screw is driven through shoe for fixing stay and—presto—a vibration-proof attachment! Fewer parts to handle, faster, easier assembly.
TINNERMAN Speed Nuts

Decatur, Ala. **Thomas J. Kelley Jr.,** consultant in the jail and prison division, has been promoted to vice president.

—o—

Dr. Hamnett P. Munger has been appointed by Battelle Memorial Institute, Columbus, O., to co-ordinate its

DR. HAMNETT P. MUNGER

air-pollution research activities and to act in a liaison capacity between Battelle and industry.

—o—

Metals Disintegrating Co. Inc., Elizabeth, N. J., has named **E. Eugene Lenrow** as sales representative in New York state.

—o—

Myron G. Lehman, formerly vice president, treasurer and a director, **Buffalo Housewrecking & Salvage Co.,** Buffalo, has been elected president, succeeding the late **Daniel A. Roblin. N. H. Jacobs** was named first vice president and a director; **Daniel A. Roblin,** second vice president and a director; and **Peter J. Lehman,** treasurer and a director. **Harry J. Lehman** was re-elected secretary and a director.

—o—

Malcolm W. Valentine has been named superintendent of inspection and quality control for **Hunt-Spiller Mfg. Corp.,** Boston.

—o—

To co-ordinate sales and warehouse activities in each area, **Sylvania Electric Products Co.** announces reorganization of its California sales division into the Central Pacific division, San Francisco, and South Pacific division, Los Angeles. **Robert C. Harper** was appointed division sales manager, lighting products, Central Pacific division, and **Charles I. Brady** was named to the same position, South Pacific division. In the radio tube division of Sylvania, **Gabriel V. Bureau** was appointed field engineer, equipment sales department, and **John H. Hauser,** assistant manager, distributor sales, Emporium, Pa., was transferred to Chicago sales office.

—o—

George C. Jelliffe has been appointed eastern district manager with headquarters in New York for **Ilg Electric Ventilating Co.**

—o—

L. C. Grimshaw has been appointed assistant chief metallurgist at **Firth Sterling Steel & Carbide Corp.,** McKeesport, Pa. He formerly was with Latrobe Electric Steel Co.

—o—

National Supply Co., Superior Engine Division, has appointed **John J. Fetsko Jr.** as regional manager in charge of all inland waterways diesel sales. He will have headquarters at the division's office in St. Louis.

—o—

Van H. Leichliter, American Steel & Wire Co., Cleveland, subsidiary of U. S. Steel Corp., has been named assistant vice president-operations. He

VAN H. LEICHLITER

succeeds to the vacancy created by the recent promotion of **Walter F. Munford,** vice president-operations. **Umbert F. Corsini** succeeds Mr. Leichliter as general superintendent, South Works, Worcester, Mass.

—o—

General Electric Co., Schenectady, N. Y., announces appointment of **Max I. Alimansky,** formerly engineer, capacitor divisions, transformer and allied product divisions at Pittsfield, Mass., as assistant to the manager of engineering. He is succeeded in his former position by **Merritt E. Scoville. Clement E. Sutton Jr.** was named manager, distribution transformer sales division. **J. Russell Watt** has been appointed sales manager, industrial laminates and insulating materials for the chemical department at Coshocton, O., and **G. M. Hartley** as manager of Glyptal alkyd resin plant in Schenectady.

—o—

C. C. Christy has been named assistant purchasing agent, **Laclede-Christy Co.,** St. Louis, succeeding **B. N. Wright,** who has been added to the St. Louis district sales staff.

—o—

Edward A. Weymouth has been appointed manager of sales and **Arthur H. Paden** as assistant manager of sales, **Pittsburgh Limestone Corp.,** subsidiary, U. S. Steel Corp.

—o—

Donald W. Beery has been appointed senior engineer in the recently organized synthetic fuels and chemicals department of the chemical plants division, **Blaw-Knox Co.,** Pittsburgh.

—o—

Leslie H. Donald has been appointed director of purchases and supplies, Calumet Division, Calumet, Mich., **Calumet & Hecla Consolidated Copper Co.,** and is succeeded as purchasing agent by **Edward A. Medlyn.**

—o—

Herman Merker, formerly a vice president, has been elected president of **Pressed Steel Tank Co.,** Milwaukee. He suceeds the late **H. O. Brumder. R. H. Dieckelman** succeeds the late **Kenneth Cole** as manager of the Chicago office.

—o—

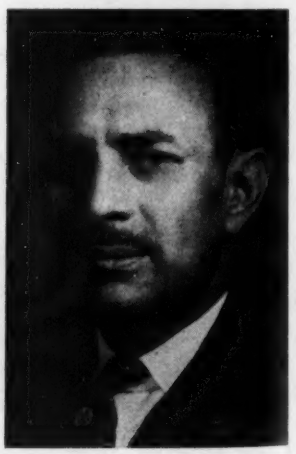
Wayne Lorenz has been named sales representative in New York and northern New Jersey for **John Oster Mfg. Co.,** Racine, Wis.

—o—

Black, Sivalls & Bryson Inc., Kansas City, Mo., announces appointment of **Johnson Roney II** as Florida representative to handle safety heads and related products.

—o—

John F. Benjamin has been elected a vice president of **Warren Foundry & Pipe Corp.,** New York. Formerly



JOHN F. BENJAMIN

general sales manager, he will continue in charge of sales in his new executive post.

—o—

J. W. Herman, treasurer and assist-

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ant secretary, Lukens Steel Co., has been elected a director of **American Machine & Foundry Co.**, New York.

—o—

Plibrico Jointless Firebrick Co., Chicago, announces appointment of **Cody R. Beane** as manager of Plibrico Sales & Service Co., Charleston, W. Va., succeeding the late **Joseph S. Stanley.**

—o—

John J. Kennedy Jr. has been appointed assistant treasurer, **Continental Can. Co.**, New York.

—o—

Paul E. Thomas has been appointed assistant general superintendent in charge of service departments of Gary steel works, **Carnegie-Illinois Steel Corp.**, at Cary, Ind.

—o—

H. F. Froelich has been named assistant purchasing manager of **Dearborn Motors Corp.**, Detroit.

—o—

Edward W. Kavanagh, formerly sales manager, Ulster Iron Works, has become associated with the **Manganese Steel Forge Co.**, Philadelphia, in charge of sales, service and research of its railway division, southern region, with office in Norfolk, Va.

—o—

Westinghouse Electric Corp. announces appointment of **F. H. Clark** as sales manager, standard control division, Beaver, Pa.; **O. O. Rae** as manager of the southeastern district, succeeding **Thomas Fuller,** retired; and **E. W. Seay** as sales promotion manager, eastern district, succeeding **R. F. Gomber.**

—o—

New Britain-Gridley Division, New Britain Machine Co., announces appointment of **Eino Hill** as an additional representative in the Chicago territory. He will complement the duties of **Jack Barry,** who has been Chicago representative for many years. **Gus Gran** joins the division in the Detroit office.

CARTER C. HIGGINS

CURTNER B. AKIN

Carter C. Higgins has been elected president and general manager of **Worcester Pressed Steel Co.**, Worcester, Mass. **John W. Higgins,** president from 1912 to 1950, became chairman of the board and retains his position as treasurer. **Maynard F. Carter,** comptroller, succeeds Carter Higgins as secretary. Other directors are **Owen H. Wenning,** sales manager, and **J. Walter Gulliksen,** general superintendent. **Trusten P. Draper,** vice president and general manager since 1938, has retired.

—o—

C. L. Stocker has assumed sales and engineering responsibilities for **Lincoln Electric Co.** in the San Francisco area. **M. F. Yale** and **T. Nichol** have been added to the welding engineering staff at Emeryville, Calif. **A. L. Patnik** will be responsible for welding engineering in the Seattle district.

—o—

Richard R. Tettelbach has been appointed assistant advertising and sales promotion manager, **Cleveland Chain & Mfg. Co.**, Cleveland.

—o—

Edwin F. Blair, New York attorney, has been elected a director of **Packard Motor Car Co.**, Detroit, succeeding **George T. Christopher.**

Curtner B. Akin has been named manager of the mechanical tubing department of **National Electric Products Corp.**, Pittsburgh. He has been with Service Steel Co., where for the last five years he sold steel tubing throughout the Detroit area.

—o—

Charles Mertler has been appointed manager of engineering and production for **Stevens Mfg. Co. Inc.**, Mansfield, O. He has been associated for the last 20 years with Westinghouse Electric Corp. in the Mansfield plant.

—o—

William F. Schupp has been appointed assistant district sales manager of the Cincinnati district sales office of **Republic Steel Corp.** He has been employed by Republic Steel and its predecessor companies since 1925.

—o—

John Horth has been named manager of the St. Louis office of **De Laval Steam Turbine Co. H. H. Reynolds** was appointed manager of the company's Los Angeles office.

—o—

Holcroft & Co., Detroit, announces appointment of **Wallace F. Schott** as its representative in eastern Ohio and western Pennsylvania. He will have headquarters in Cleveland.

OBITUARIES...

George A. Rowland, 57, sales manager, Buflovak Division, **Blaw-Knox Co.**, Buffalo, died Feb. 4.

—o—

William V. Bulloch, 87, former president who headed the firm of **Parmenter & Bulloch Mfg. Co.**, Gananoque, Que., Canada, for more than 40 years, died Feb. 3.

—o—

H. I. Beardsley, 70, associated with **Rockwell Mfg. Co.**, Pittsburgh, for many years, and since 1940 advisor to its Pittsburgh Equitable Meter Division, died Jan. 23.

—o—

Francis J. Troy, 33, manager, **Acme Tool & Die Co.**, Rochester, N. Y., since the death of his father, five years ago, died Feb. 8.

—o—

John Buck, 59, assistant works manager, **Scullin Steel Co.**, St. Louis, died of a heart attack Feb. 9.

—o—

Frederic A. Schaff, 65, chairman of the board of **Combustion Engineering-Superheater Inc.**, New York, died Feb. 7 at his home in Bronxville, N. Y. He was an officer or director of numerous companies manufacturing equipment for railway or power fields.

—o—

William B. Price, who retired in 1948 as director of research at **Scovill Mfg. Co.**, died at his home in Waterbury, Conn., Feb. 7.

—o—

Lynn McNaughton, 68, vice president of the original **Cadillac Motor Car Co.**, Detroit, died in Henry Ford Hospital Feb. 8.

Quicker Replacements Lower Costs

These Standard ASSEMBLIES Simplify the REPLACEMENT-PROGRAM

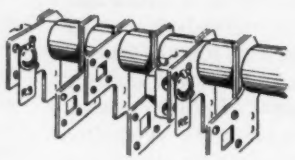
EC&M *Tab-Weld* Resistor sections for d-c crane and mill control have uniform mounting dimensions for *all* sections. Internally, each section has all grids of the same size, with grids connected in series.

Sections are rated with continuous current carrying capacities from 32 to 150 amperes, depending upon the size of grid per section. These mill sections, using nine different sizes of grids, require *no change — no shop alteration* when a field replacement is needed.

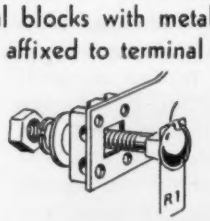
Convenient taps, resistance value stabilized by welding, shorten the replacement time. *Switch to EC&M Bulletin 942 Tab-Weld Plate Resistors.*

Each section complete with—

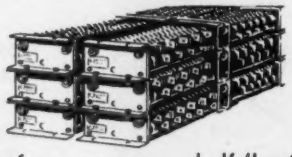
1—Suitable taps permanently in place at convenient points.



2—Terminal blocks with metal identification tag affixed to terminal bolts.



3—Uniform end - frame mounting hole dimensions for ease of stacking.



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Production AND Engineering
NEWS AT A GLANCE

PROVIDES MORE "BITE"—New process of making carbide tipped circular saws developed by W. F. Meyers Co., Bedford, Ind., eliminates uneven stresses and strains in the blade, and overcomes objectionable noise and vibration. According to the company, part of the process consists of cutting slots in the saw blanks similar to spokes in a wheel and filling them with a material having different harmonic qualities than the steel saw body. The method also enables as many teeth as required to do a specific job to be placed in the blade.

NO HANDLING PROBLEM—Movement of large, heavy machinery on low-bed trucks direct from shipside to ultimate destination is proving economical at the San Francisco Port of Embarkation. Heavy items thus far moved, without use of special blocking or bracing as required on other carriers, include a 62-ton rock crusher and three 39-ton cranes.

AIDS INDUSTRIAL SLEUTHING—Uranium metal is enabling the B. F. Goodrich Research Center, Brecksville, O., to expand the usefulness of the electron microscope. E. H. Rowe, in charge of the concern's electron microscope work, states that some of the objects studied in the rubber industry are so small that it would take a million of them laid end to end to extend a distance of 1 inch. These show up very dimly on the electron microscope plate. However, if a sample is sprayed with a stream of heavy metal atoms at an oblique angle in a vacuum, a striking effect is obtained. The particles become coated on one side with a thin film of metal while areas on the opposite side receive no coating. Beside increasing image contrast, treatment gives the picture a three-dimensional appearance which simplifies particle identification.

TOUGH ALLOY—Searing heat of a jet engine can be withstood by a new alloy developed by Harold V. Kinsey, a Federal Bureau of Mines metallurgist in Ottawa, Ontario. The metal, reported by *Aluminum News*, consists of about 30 per cent aluminum and is 10 per cent lighter than other alloys of similar type. Called Kinsalloy, it already has stood up under 1000 hour tests at 2100° F while subjected to heavy loads.

"AUTOMATION"— Industry is in process of coining a new word to describe a new cost-cutting technique. In the preliminary program of the American Society of Tool Engineers' convention to be held coincident with the Industrial Cost-Cutting Exposition in Philadelphia, April 10, the word "automation" appears no less than five times. It was coined to describe the process of converting to automatic operation something previously done by hand, with twin objectives of reducing cost and cutting down physical efforts of the worker.

PUTS ON THE PRESSURE—Loads on journal bearings equal to two freight cars of coal in weight can be exerted by a test machine designed and built for the Naval Engineering Experiment Station, Annapolis, Md. The Department of Defense, Washington, says the machine uses the same kind of frictionless surface on its loading device as the 200-inch Hale telescope. Even under full load, a small coin will register on the balance arm of the torque measuring device.

JUMPS OUTPUT — Revamped facilities in the plant of Wheatland Tube Co., Wheatland, Pa., is paying off dividends. The company currently is realizing a 30 per cent increase in pickling and galvanizing production of pipe and substantial yearly savings of zinc. The plant, which is set up to produce all sizes of pipe from ½ to 3 inches, derives most of its benefits from four permanent nonelectric type magnetic pipe rolls set in tandem. These are used for the drag-out and permit two lines of pipe to be handled simultaneously from the galvanizing pot. (p.84)

SPLINE HONING—Honing of splines presents several problems. To cut efficiently the stones must be self-dressing. Also to generate an accurate cylinder the dressing action must be uniform over full surface of all stones. These problems were over come recently by equipping a heavy-duty honing machine with oscillating motion and designing tools about one-half as wide as the spline. (p.88)

REAL PUSH—While work of A. L. Marsh and Elwood Haynes in the 1900s contributed to the progress of stainless alloy castings it may be definitely stated that the real impetus came when Harry Brearly of Sheffield, England, discovered in 1912, that a straight chromium material of certain range and carbon by proper treatment would produce satisfactory stainless cutting blades. W. H. Worrilow indicates further that up to this time melting furnace equipment consisted of crucibles, bessemer converters and open hearth furnaces. (p.91)

CONTROLLED LOAD — In a new by-product coke oven designed by the author yields of the oven can be controlled by measuring the load. Also travel of hot flue gas into the coal charges is minimized by the flue design, and its intrusion is prohibited by controls of pressure, volume and temperature in the chamber side reaction zone. It is pointed out that the measured load and maintained pressure not only make intrusion of hot flue gas impossible but insure that tightly carboned brick joints deposit their carbon nearest the flue side of the joint where the brick is at a higher temperature. (p.96)

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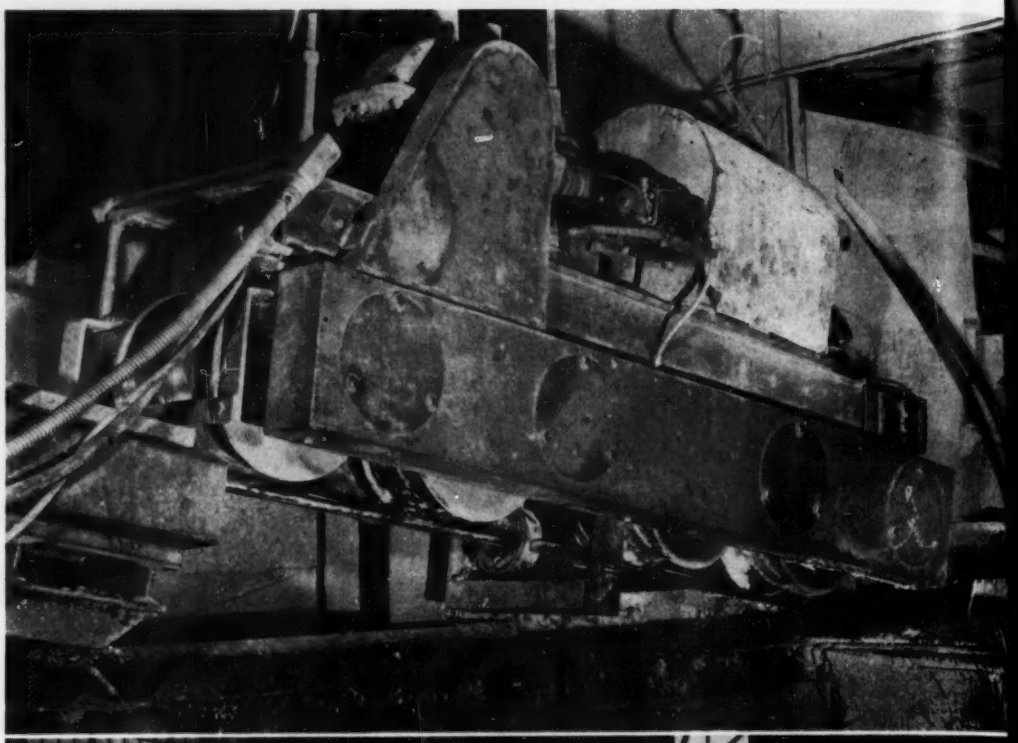


Fig. 1 (top)—View of double drag-out roll tandem which carries pipe from the zinc bath to the delivery conveyor. Notice ring between second and third rolls which gives an outside wipe to the travelling pipe

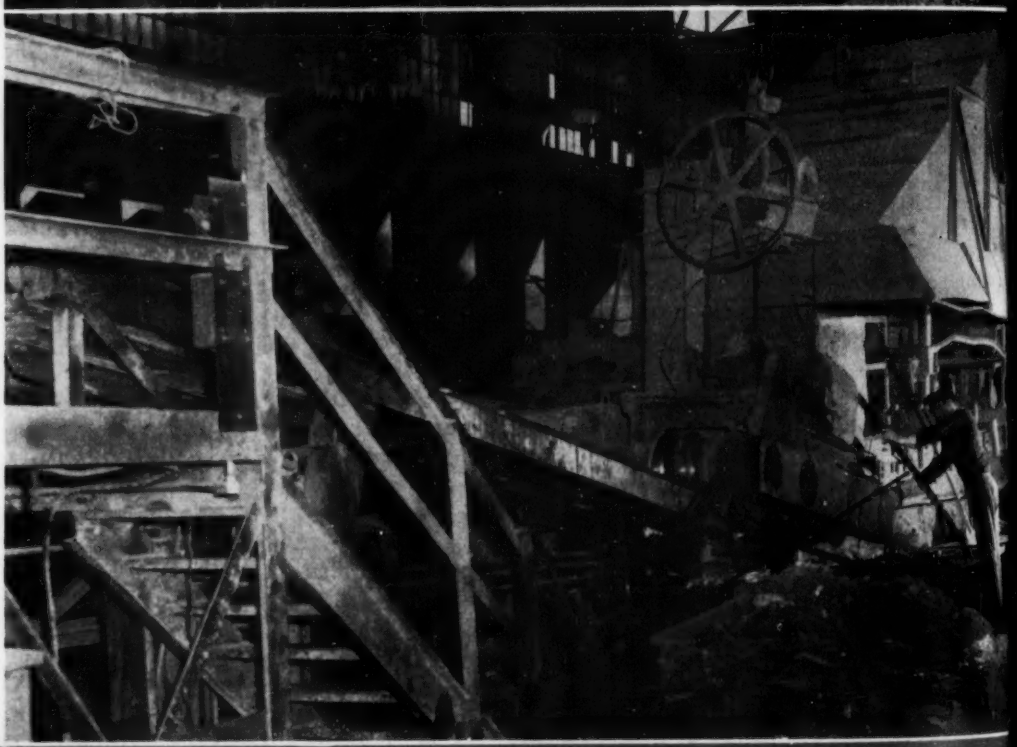


Fig. 2 (center)—General view of the galvanizing pot, roll tandem drag-out and inclined delivery conveyor which moves the pipe up to the blow valve operator's station. In immediate foreground is seen a pile of chilled spelter drippings which will be remelted in pot

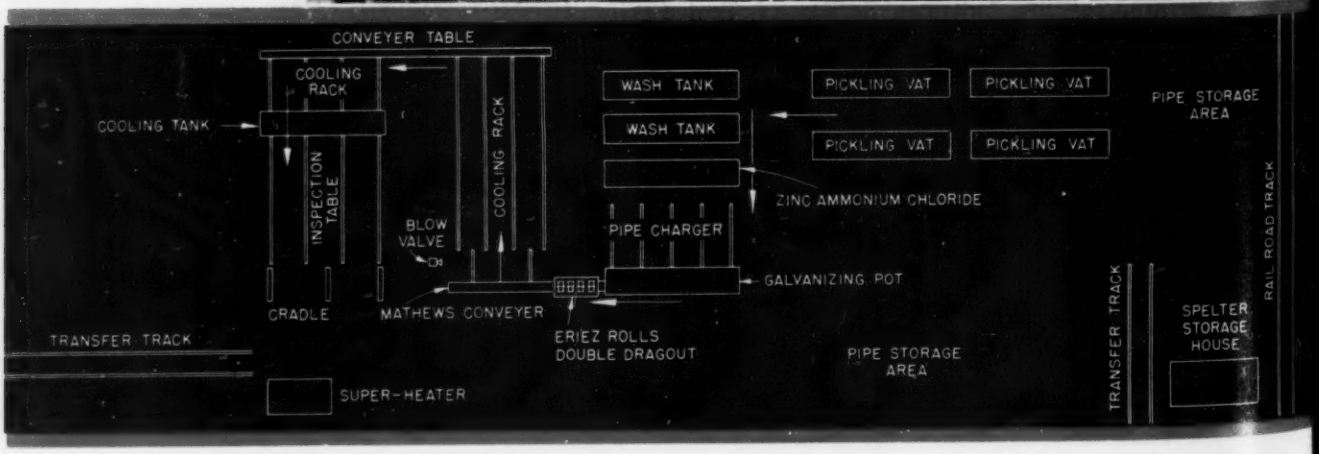


Fig. 3 (bottom) — Plan view of the pickling and galvanizing plant showing flow of material through building

Photography by the author

REVAMPED PRODUCTION FACILITIES

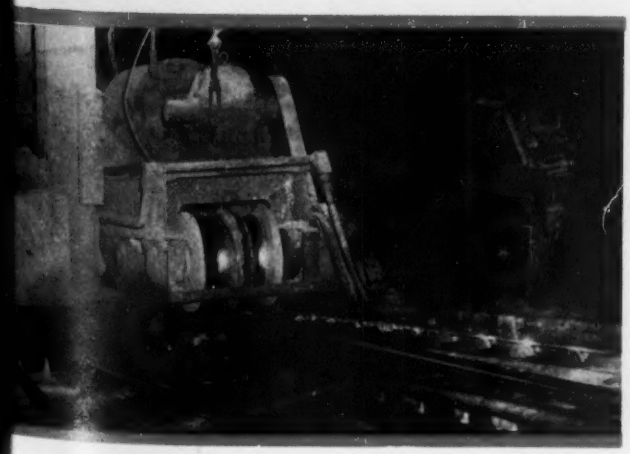
By DAN REEBEL
Associate Editor, STEEL

Boost Pipe Galvanizing 30%

This novel handling arrangement, which utilizes four permanently magnetic carrier rolls set in tandem for double drag-out of pipe from the galvanizing pot, is also affording Wheatland Tube Co. tremendous savings in zinc consumption

THIRTY per cent increase in pickling and galvanizing production of popular size pipe and substantial yearly savings of zinc are being realized by Wheatland Tube Co., Wheatland, Pa., in the operation of their redesigned and rebuilt pickling and galvanizing department which handles pipe in all sizes from ¼ to 3 inches inclusive in diameter. Engineered and designed by the company, the new facilities incorporate the use of four permanent nonelectric type magnetic pipe rolls set in tandem which is used for the drag-out and permits two lines of pipe to be handled simultaneously from the galvanizing pot. The double contoured rolls used in the tandem were produced by Eriez Mfg. Co., Erie, Pa.

Finished rolled pipe from the company's butt weld mills is brought by transfer buggy from the mill building to the pickling and galvanizing department. An ample storage area is provided for stocking certain sizes of pipe not scheduled for immediate pickling and galvanizing. This affords the operators a great amount of production flexibility in that they always have available a quantity of any size pipe which may be needed for immediate processing.



During processing, pipe in lifts is first put into the pickling tanks containing 10 per cent sulphuric acid and retained until perfectly clean—which usually requires from 1 to 1¾ hours. Automatic agitators are utilized and so adjusted as to place the material in solution 4 minutes and out 30 seconds between immersions.

Baffle Used In Galvanizing Pot—Following pickling, the pipe is dipped two or three times in running water and then passed through a wet flux tank containing zinc ammonium chloride. Usually 5 minutes immersion at 120° F is sufficient to carry out this prefluxing operation. Next a crane picks up the lift of pipe and delivers it to a charging table which gently rolls the material piece by piece down through a hot molten flux bath of sal ammoniac (ammonium chloride) which rests on half of the top of the molten zinc bath in the galvanizing pot. A vertical baffle plate extending the entire length of the galvanizing pot retains the sal ammoniac on the pot's entry side. This layer of flux is approximately 2 to 4 inches in depth. The pipe rolls on down a slight inclined plane, passes under the baffle and emerges at the delivery side of the pot where the operator removes it as desired.

All pipe is cut to a standard 21 foot length for processing. Each 8 to 10 seconds an operator, by use of tongs, removes a length of pipe from the pot and places it on the under side of the magnetic drag-out roll tandem which effects a complete removal from the bath. Approximately 500 pieces hourly of 1¼-inch pipe can be removed from the pot by this method.

Raw material charged into the galvanizing pot consists of prime western zinc with an addition of 0.2 to 0.3 pounds of aluminum per ton of zinc used.

Fig. 4—Double drag-out showing last roll of the tandem. Surplus spelter is being blown out of pipe to the left of the rolls, other pipe is moving to the left on the first cooling rack

Roll Tandem Permanently Magnetic—The double drag-out tandem used is rather unique in that the rolls require no electricity or wiring to generate a magnetic field, and are in no way harmed by temperatures of approximately 800° F used in the galvanizing operation. Installation of the roll tandem has produced tremendous savings for the operators. Production has been speeded up 30 per cent on pipe 1¼-inch and smaller which accounts for about 80 per cent of the organization's total production, while pipe ranging in size from 1¼ to 3 inches is being produced at about a 15 per cent increase. Some factors responsible for this latter increase were changes made in the galvanizing pot capacity and the addition of improved heating facilities. The plant is set up to produce all sizes of pipe from ½ to 3 inches inclusive in both standard and extra heavy grades.

Tremendous savings have resulted in that the rolls are presently operating slightly over half the speed they were in the old installation which allows more excess zinc to run back into the pot. It is estimated that this saving alone will reduce zinc consumption considerably.

Between the second and third roll of the pipe drag-out tandem is located a ring through which the pipe travels and which by use of compressed air blows off all excess zinc adhering to the outside diameter of the pipe. This excess is subsequently returned down the pipe by gravity into the galvanizing pot.

Many other savings have resulted through the use of these rolls in that they require no electrical power and the absence of slip rings and other attendant electrical accessories eliminates the necessity of constantly cleaning or replacing these parts.

Zinc Blown From Inside Pipe—As the pipe leaves the roll tandem, it moves up a Mathews conveyor to the blow valve operator station where it is lifted manually and centered in a nozzle which blows out all excess zinc from the inside of the pipe by use of superheated steam at a pressure of about 100 pounds per square inch. This excess zinc also returns to the galvanizing pot.

Material is then placed on a Link-Belt dog type conveyor rack which moves it down an incline while it is in the process of cooling. After leaving the cooling conveyor, material moves at right angles on a v-shaped table trough conveyor built by Taylor Wilson Co. over to the second cooling rack which runs in the opposite direction to the first cooling rack.

At the end of the second cooling rack, the pipe moves down into a dip tank containing water at normal temperature and then runs up on an inspection table which is the last section of the second cooling rack. Eventually the pickled and galvanized pipe is deposited in a delivery cradle from where it is removed in lifts and sent over to the threading floor which is located in another building.

There is no back tracking in this plant as the material moves progressively from one stage to another and eliminates any need of additional materials handling.

Fig. 5 (right)—Delivery cradle at end of second cooling rack. From here material is sent to a threading department in another building

Fig. 6 (left)—Pipe is being run down into a water cooling bath prior to entering onto inspection rack. Portion of pipe lifting rig may be seen in the background

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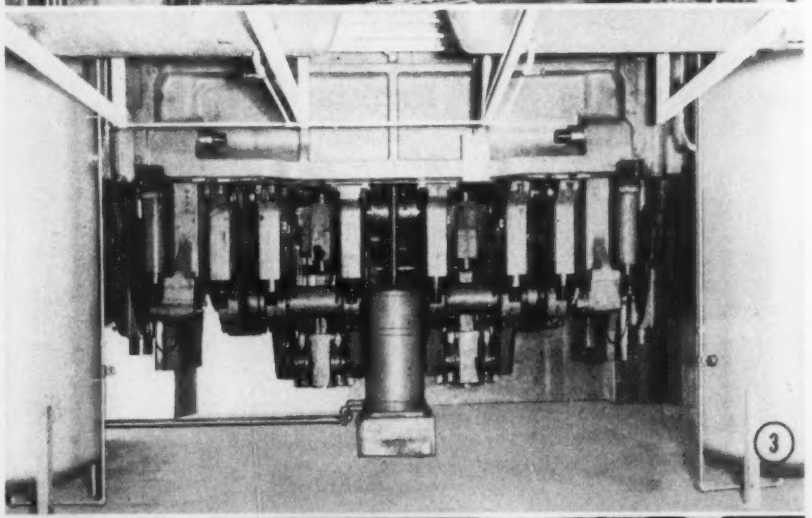
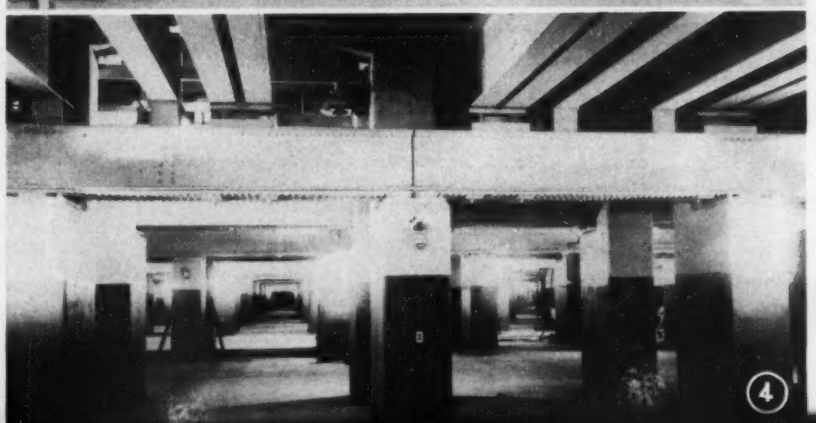
INSTALLATION FLEXIBILITY

... how it is attained in Chrysler's press plant





FLEXIBILITY of installation or relocation of heavy press equipment in Chrysler Corp.'s Nine-Mile press plant just outside Detroit is shown in accompanying illustrations. Weight of the presses is carried on transverse I-beams resting on longitudinal beams, in turn carried by the foundation pillars. Work floor is of laminated timber, in easily removable sections. Overhead cranes of 50-ton capacity handle movement of stock or of sections of presses when they are being installed or repositioned. Fig. 2 shows a closeup of a 900-ton press, occupying floor area of 12 x 24 feet. The entire press weighs 440 tons and, as installed, rises 15 feet above the floor and 18 feet below it. The underfloor section, the four accumulators and portions of the press subframe and working parts are shown in Fig. 3. Fig. 4 indicates how structurals are arranged to support the presses, suggesting how easily maintenance work can be carried out because of the large open area of the basement.

A general view of the working floor, showing craneways and some of the presses already installed, is given in Fig. 1. The plant is now operating 45 presses, ranging from 10-ton to 900-ton size. Ten overhead cranes, ranging from 20-ton to 50-ton capacity, are available.

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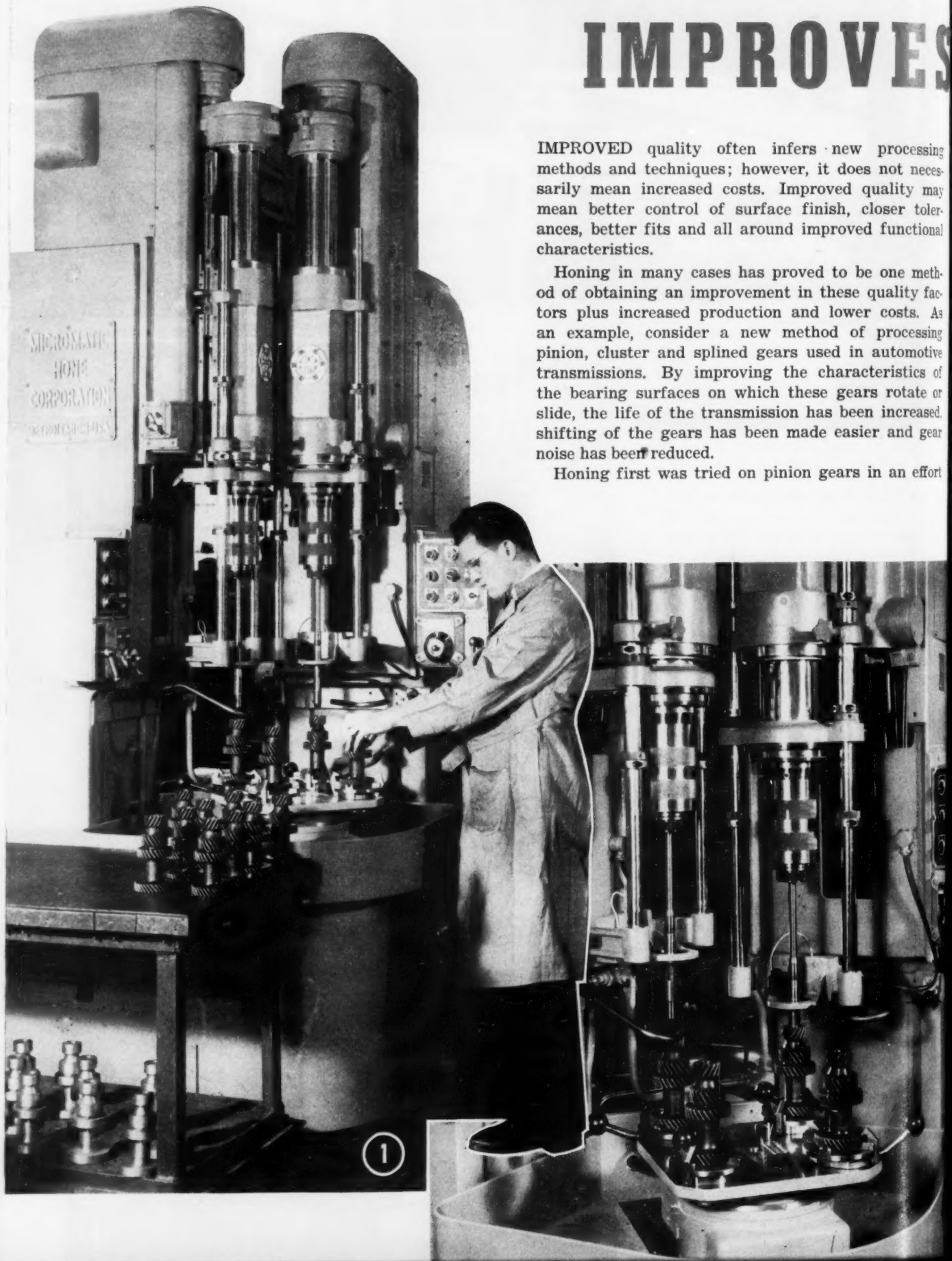
New Honing Method

IMPROVES

IMPROVED quality often infers new processing methods and techniques; however, it does not necessarily mean increased costs. Improved quality may mean better control of surface finish, closer tolerances, better fits and all around improved functional characteristics.

Honing in many cases has proved to be one method of obtaining an improvement in these quality factors plus increased production and lower costs. As an example, consider a new method of processing pinion, cluster and splined gears used in automotive transmissions. By improving the characteristics of the bearing surfaces on which these gears rotate or slide, the life of the transmission has been increased, shifting of the gears has been made easier and gear noise has been reduced.

Honing first was tried on pinion gears in an effort



1

Bearing surfaces of pinion, cluster and splined gears for automotive transmissions are honed more efficiently using new technique and equipment

GEAR SURFACE FINISH

to keep the bore, on which the gear turns, concentric with the pitch line of the teeth. This was made practical productively by a change in processing methods and by the development of automatic size control. The soft gear blank is honed to generate a hole that is accurate in size and geometry. It is then pressed on arbor and the teeth are cut concentric with the bore. The gear then is hardened. This causes the gear to distort. It is again honed to eliminate this distortion and to develop the required surface finish and accuracy. This can be done without changing the relationship of the teeth to the bore because of the self-centering characteristic of the honing equipment.

Double-spindle honing machines are used in both these operations, Fig. 2. These machines have electronic control and automatic indexing tables. Two gears are honed simultaneously. Later models of the machine are equipped with magazine-fed automatic loading and ejecting fixtures, Fig. 4.

Helical Wobble Eliminated—Besides assuring concentricity between teeth and bore, the changed processing has eliminated helical wobble which makes the gears noisy and subject to rapid wear. The honed finish—15 microinch r.m.s.—has eliminated needle bearing whistle and chatter. Production has been increased five-fold per machine, 1800 gears being finished per 80 hours on each machine compared to 60 per hour with the previous method. Handling and inspection have been reduced materially. The manufacturer pioneering this processing technique reports a saving of $100,000 per year.

This equipment proved so successful on pinion gears it was next applied to cluster gears. In these gears the bore is seven or eight diameters in length. Soft gear blanks are honed, removing from 0.004 to 0.005-inch from the diameter. The machine used is a double quill type equipped with an automatic rotary index table and electronic control, Fig. 1. Two parts are honed in a 30 to 35-second cycle.

Teeth then are cut concentric with the honed hole. The gears are carburized and hardened and the bore is again honed. Here again the self-aligning of the honing equipment assures that inaccuracies of the bore will be corrected without changing the relation of the teeth to the bore.

In the old method of processing only a ½-inch section was ground at each end of the bore for the needle bearings. Production was low due to the difficulty of grinding the two holes on the same axis and holding them concentric with all the gear members. Gears had to be chucked on the pitch line of the teeth on both the large and small members. The fixture drivers and chucks were expensive and required constant maintenance.

Length of Bore Honed—In the new method the full length of the bore is honed. The gear is clamped in the simple fixture by three cam-operated fingers, Fig. 5. The bore is checked (*Please turn to Page* 106)

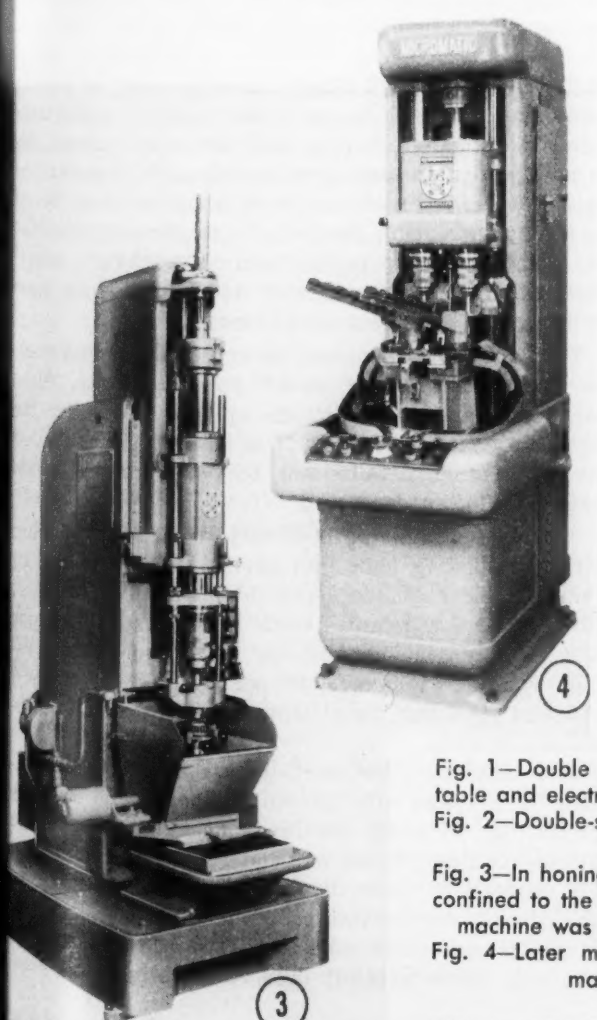


Fig. 1—Double quill type machine equipped with an automatic rotary index table and electronic control. Two parts are honed in a 30 to 35-second cycle
Fig. 2—Double-spindle honing machines have electronic control and automatic indexing tables
Fig. 3—In honing splined gears, the tool cannot be rotated since each stone is confined to the surface of one spline. To overcome this, a heavy-duty honing machine was equipped with an oscillating motion in place of the rotation
Fig. 4—Later models of double-spindle honing machines are equipped with magazine-fed automatic loading and ejecting fixtures

Machinery Field

By GUY HUBBARD
Machine Tool Editor

PLANER TIME CALCULATOR: In addition to their ingenuity in designing machines for cutting metal, engineers in the machine tool industry rank high as designers of practical calculating devices for determining speeds, feeds and resulting output. Some of these devices are integral with controls, others are fastened to machines, still others are separate instruments—usually in the form of special slide rules, either circular or straight.

Graham E. Marx, assistant sales manager, G. A. Gray Co., Cincinnati 7, O., has just presented me with a clever new version of the straight slide rule. This pocket-size instrument—which incidentally is designed for use only with planers equipped with modern variable voltage drives—has six scales, three of which are on sliders and two transfer plates which carry readings from scale to scale.

Given type of material to be cut, type of cutting tool, depth and width of cut, and length of stroke, the calculator first gives (from a chart on the back) recommended practical speed and feed. Then—reversing the calculator—(1) Set arrow on top movable scale under maximum feasible return speed (300 feet per minute on modern planers), (2) place arrow on center movable scale under transfer line leading to recommended cutting speed, (3) set width of cut on lower movable scale under transfer line leading to length of stroke and finally under recommended feed read planing time.

This special slide rule is of all-vinylite construction to stand up under long continued use in the shop. It is available from G. A. Gray Co., postpaid, for $2.00, which also covers protective case and instructions. I am quite a collector of industrial slide rules. I have never seen anything quite like it.

MYSTERIES OF HIGH SPEEDS: Magic faded out of the machine shop with the passing of those old-line drummers who extolled the imaginary powers of secret hardening compounds, snake oil coolants and the like.

Even though better reasoning and better laboratories have done away with the magic, the machine shop still continues to have its mysteries to keep research men occupied. Among current mysteries are those involved with high speed cutting—both punching and machining.

Not long ago I was visiting a plant where a high speed automatic punch press was being tooled up to run at 1200 strokes per minute, blanking parts out of sheet steel. To begin with the punch had been ground to close fit in the die, and had been set to enter the die. This worked well enough at low speed tryout, but when the press was speeded up it just didn't work.

A press operator who depended more on experience than on theory took the problem in hand. He shocked the engineering staff by having the punch ground down to a "sloppy fit" in the die and backing it up until it did not enter the die at all. Then he started the machine at top speed. To the surprise of everyone but himself, perfect blanks were "popped out" at a great rate.

He explained that the action was something like what happens when a silk scarf is tossed into the air and cut with a fast stroke of a sharp sword. Possibly he had a good point there—something about inertia of the material being cut evidently was what he had in mind.

More recently I saw a somewhat similar mystery in connection with the tooling up of an automatic lathe to turn steel forgings with carbide tools. Starting it up according to the rules in the book resulted in poor performance. Caution dictated that the speed should be reduced. A bold experimenter, however, threw caution to the winds, put on a much more powerful motor, increased the speed to 1200 surface feet per minute—and it worked like a charm.

He explained his success by saying that he had in effect "crossed the sonic barrier into the supersonic zone of metalcutting." Not a bad explanation for the success of bold pioneering which in the art of metalcutting corresponds to the crossing of the sonic barrier in aviation.

THEY ARE EXPENDABLE: Increased cost of human labor as compared to decreased cost of automatic mechanical manufacturing and assembly operations, in more and more instances is making it unprofitable to have things repaired. As a result we are likely to see an increasing number of subassembly machinery details made up in the form of "packaged units" designed to be thrown away and replaced by new units when worn or damaged in service.

This already is apparent in expendable items such as packaged bearings, small pumping units, filter cartridges, and even complete spindle assemblies for light duty machine tools. It is likely to be extended to many other details—not only consumers' goods but of capital goods as well.

To those brought up in thrifty traditions of saving string, reloading shot gun shells, etc., this kind of thing at first glance looks like wasteful practice. However, a few minutes work with pencil and paper will give convincing evidence that "handicraft" repair work at $1.00 to $2.00 per hour makes many a repaired item far more expensive than a mass produced new item.

Not only that, but on machines on which "down-time" for repairs rolls up into big money and disrupts production all along the line, packaged units which quickly can be yanked out and replaced effect amazing savings in those two important directions. In the current drive to interpret machine design in terms of dollars-and-cents advantages to users—these expendable items certainly deserve to be included.

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By W. H. WORRILOW
President
Lebanon Steel Foundry
Lebanon, Pa.

FUNDAMENTALS OF STEELMAKING

NUMBER **21** OF SERIES

Another in a continuing series of articles on the making of steel and finishing it into products ready for the consumer. Each article is written by an outstanding authority in his particular field.

Production of
HIGH ALLOY STEEL CASTINGS

High stainless corrosion-resistant and heat-enduring alloy castings have made possible the truly remarkable advance seen in the technological and process industries during the past quarter century

PART II

FOR generations men had sought a means of improving the corrosion resistance and stopping the rusting of iron and steel. After many scattered research attempts over the years, hope of success at last appeared, and as had occurred many times in the past, while seeking one objective, an entirely foreign discovery of great value was made.

While the work of A. L. Marsh in 1900, and Elwood Haynes in 1905, and many others, contributed to the progress of stainless alloys in one way or another, it may be definitely stated that the real impetus came when Harry Brearly of Sheffield, England, discovered in 1912, while researching for a superior gun lining, that a straight chromium material of certain range and carbon content, by proper treatment would produce satisfactory stainless cutting blades; and in a few years stainless cutlery was broadly known and in general use.

Melting furnace equipment up to this time consisted of crucibles, bessemer converters, and open-hearth furnaces. When stainless casting manufacture first started, it was soon determined that the metallurgical control essential to establish the uniformly dependable properties required could not be produced in any of the aforesaid equipment. Providentially, the electric furnace became available about that time, and both arc and induction melting equipment came into use, aiding greatly in the early development and production of stainless castings.

Although the Heroult direct-arm electric melting furnace was talked about around 1890, the first unit was placed in operation about 1907. In this method the molten metal is refined by special deoxidizing treatments. Application of the Heroult-type furnace to steel casting practice made for great improvement in both quality and uniformity of analysis, and duplication of the casting's physical properties.

The induction melting furnace, complete with motor generators, was first operated on a commercial basis about 1925. This is properly a refined melting method and lends itself to production of superior materials in point of analytical and high-quality control. This type of melting made the production of low carbon chromium-nickel stainless alloys an outstanding quality achievement.

During this period many attempts were being made by metallurgists to determine how the valuable alloying elements of nickel and chromium could be added

Fig. 11—Burning off the head from a casting

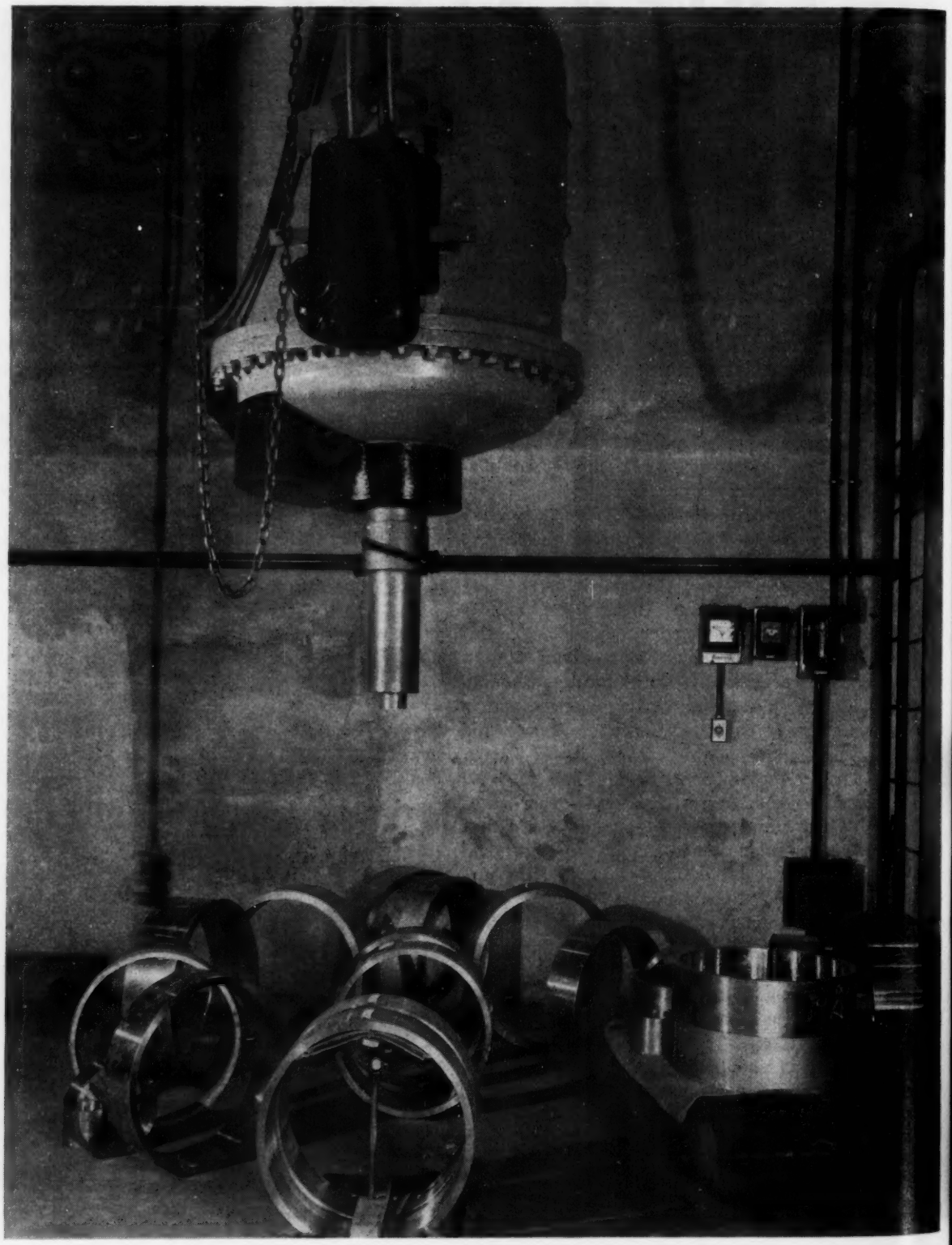
to iron, and perhaps the most far-reaching results came from the work of Benno Strauss and Edward Maurer of the Krupp Works in Essen, Germany.

In 1912, patents were granted Messrs. Krupp for materials which have become the most popular and valuable of modern times, one of these commonly referred to as 18-8-S, which is a composition of 18 per cent chromium, 8 per cent nickel, 0.08 per cent carbon. This alloy may be said to have been gleaned from the metallurgical perspective of the times, and placed stainless alloys on a practical and commercial level. This also added much further impetus and direction to subsequent research efforts.

As time marched on, great strides were accomplished in the evolution of alloys in cast form of many types, for a great number of corrosion services, and for heat and high temperature applications.

The far-reaching and obvious potential values of alloy combinations in cast form opened new horizons to the engineer who was quick to grasp their portent

Fig. 12—Million volt x-ray machine for nondestructive testing of finished castings



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and fashion them into new means and methods for broadening the technological scope. It is therefore obvious that the history of stainless alloys is woven into many major achievements today, which have been built around and depend entirely upon their outstanding characteristics.

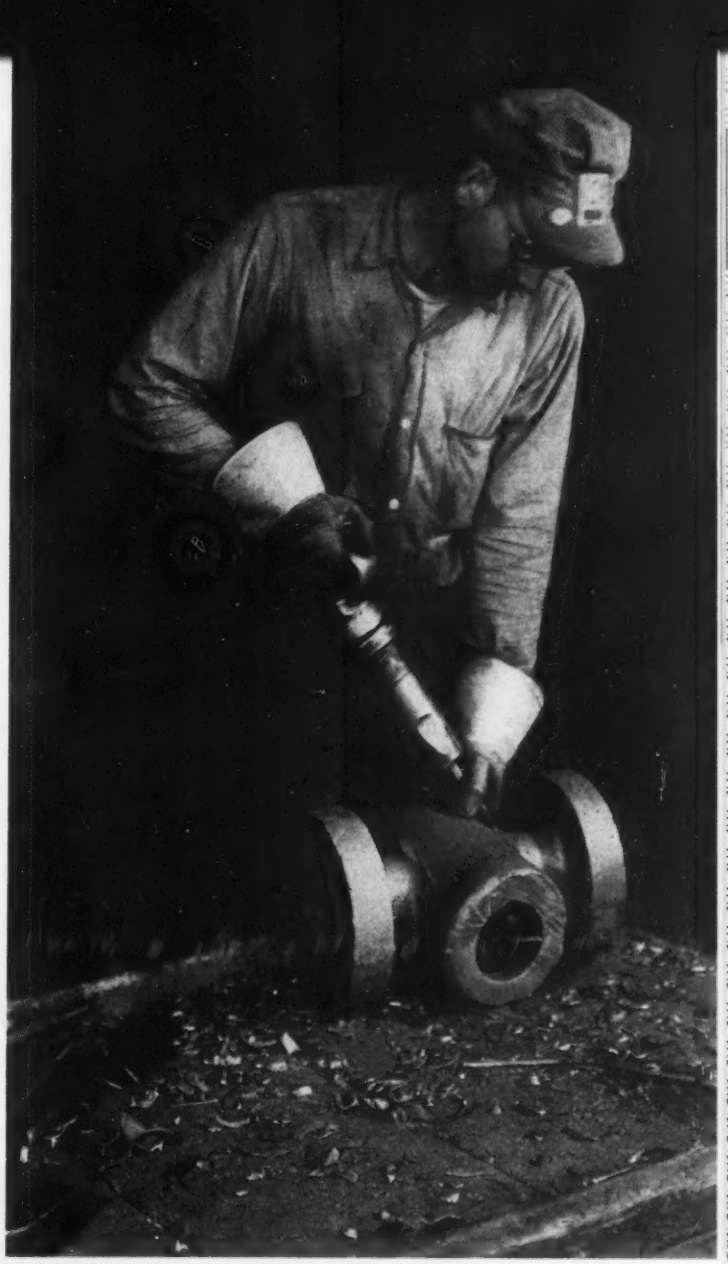
Technical knowledge is difficult to obtain, and in the beginning was slow to acquire, due to a lack of instrumentation, which perforce was to be expected, as problems require clarification for scientific approach, and means for obtaining the answers must be developed. Time was necessary to establish in an orderly manner, the complete pattern of the information needed by which relative values could be established and a comprehensive knowledge of these new alloys recorded. Meanwhile, materials for study under actual working conditions had to be produced more or less blindly, and it is surprising that such excellent progress was made in the first few years.

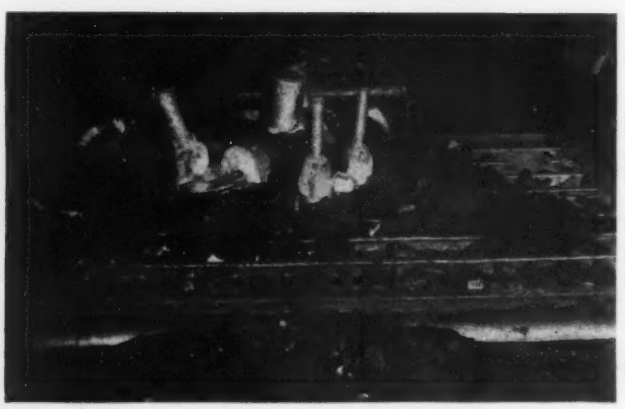
A certain pioneer spirit was essential in this approach, and many attempts completely failed. However, it was imperative that success be attained, as the technological future with all its implications depended upon the resourcefulness, ingenuity and capacity of foundrymen to learn how to design and employ these new alloy products to meet the engineering and chemical dreams which had arisen in the minds of technologists everywhere.

Brearly stainless cutlery steel was first rolled in England in 1914, then in the United States during 1915, and constituted the beginning of a "new look" in metal. Soon thereafter followed many inquiries as to the suitability of such alloy for diverse chemical applications. Many of those tried, failed due to lack of specific corrosion experience and data.

Marsh's work on chromium-nickel heating elements, or resistors, proved far-reaching.

The outstanding high temperature properties of chromium-nickel alloys suggested many applications, such as boxes for carburizing metal parts which were increasing in demand at this time due to the automobile and other developments requiring mass-production





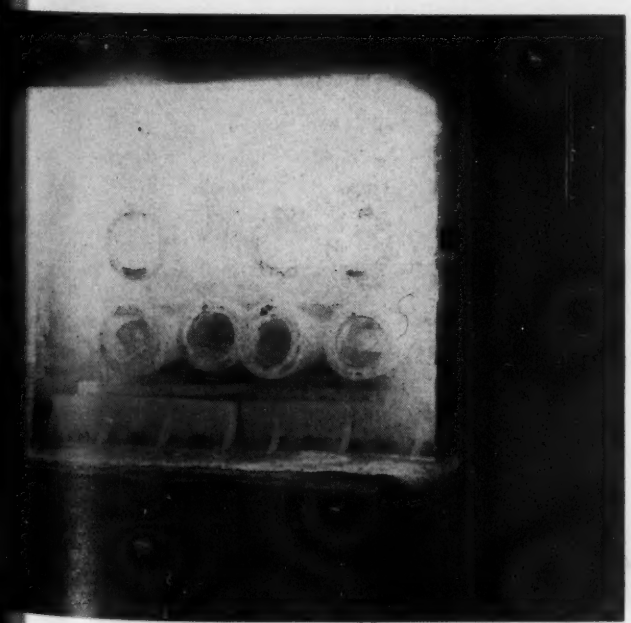


Fig. 13 (left)—Load of castings being heat treated

Fig. 14 (above)—Workman is shown chipping excess unwanted metal from a casting

Fig. 15 (directly above)—Shakeout of finished castings from the mold

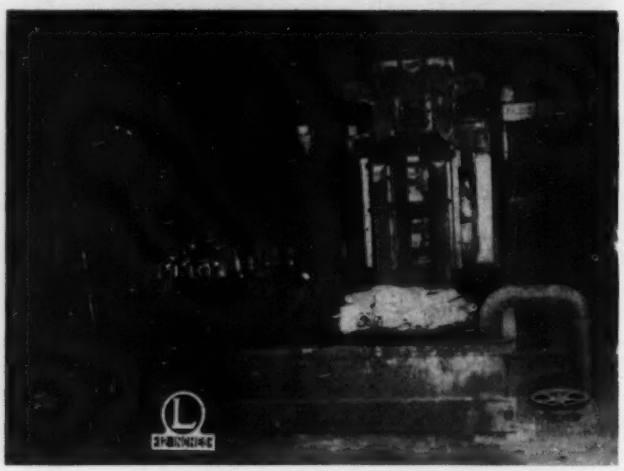


Fig. 16—Castings are being cooled in the water quench tank

facilities. Patents were applied for by Driver-Harris in January, 1916, and later granted, covering heat-resistant units for metallurgical operations. Actual manufacture of heat-resistant alloy castings began in 1915. Success of this application suggested many new types of equipment and processing methods not previously feasible due to lack of suitable alloys.

By 1919, high alloy castings containing 60 to 65 per cent nickel and 15 to 20 per cent chromium had proved their economy over steel parts for similar services, even at ten to fifteen times the cost, and their use rapidly increased although selling for well over a dollar a pound. This high cost gave rise to a number of empirically planned materials of lower alloy content based on the fact that relative values were difficult to determine at the time, and these could be sold at lower cost. This added to the growing confusion of users in deciding what alloys should be employed.

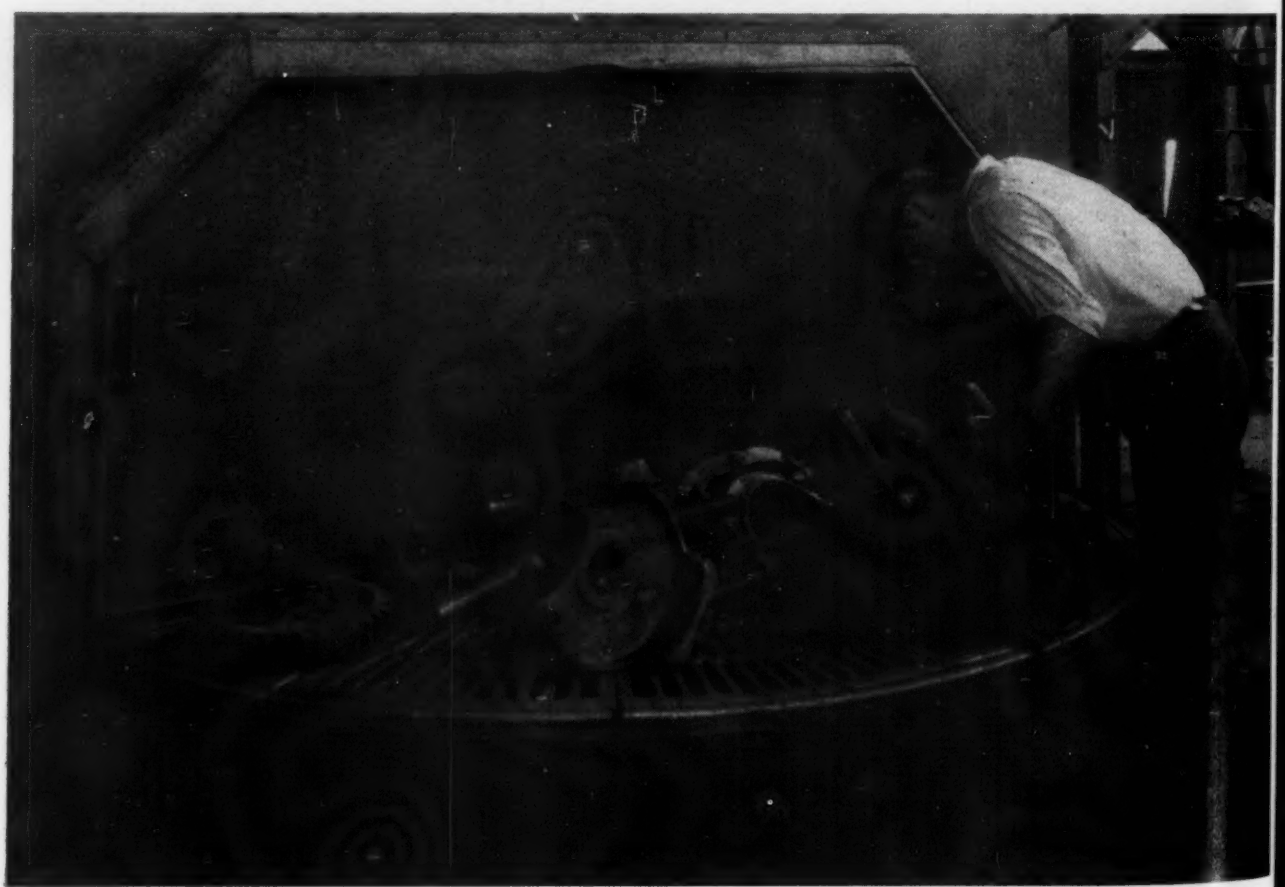
Haynes aimed more toward complex alloys for the handling of heavy acids and rendered important service in that field.

The Strauss alloy patents held by the Chemical Foundation, these being the so-called 18-8 types, attracted much attention, and the production of castings began in a small way about 1922, although stainless bars were not produced until 1927.

It is at once obvious that these new alloy casting developments, with their far-reaching business prospects, did attract those with presumed adequate producing equipment. However, there was little or no metallurgical data available on them at this period. Further, there was no conception of the unavoidable differences in melting technique, casting design, most suitable sands, shrinkage characteristics, or the physical, thermal, or corrosion properties obtainable, or the actual analytical control necessary for any given standard performance. Naturally, in the process of getting started, many inferior castings both of incorrect design and improper application were made, and as a result, great confusion and uncertainty arose in the minds of engineers and prospective users.

An example of misapplication (made without supporting information on a particular service), is the United States Navy's experi- (*Please turn to Page* 102)

Fig. 17—Sand blasting castings for scale removal



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ON ANNEALING COSTS

To pickle and anneal the body of their new coffee pot was costing Landers, Frary & Clark, makers of the famous line of Universal appliances, $7.50 per M pieces. 5 anneals, which at first seemed necessary to produce the quality product for which Universal is nationally known, jumped the cost per M pieces to $37.50. Universal knew this was far too high and decided to do something about it.

Their metallurgist, in cooperation with Revere, studied the problem in detail and then proved their conclusions by exhaustive tests. It was found that by using Revere copper strip in a certain temper, 4 anneals could be eliminated. Now, after a draw of 7¾", the copper body is annealed once then spun into its finished shape. Based on current production, this has resulted in a saving of over $10,000.00 per year, plus an improved product. Additional savings also are realized through more simplified handling, and more economical finishing operations due to the reduction in the number of anneals.

To make such a deep draw whlle holding rejects to the absolute minimum would not be possible were it not for the fine quality and consistent uniformity of the gauge and temper of the copper used. The copper body is tin plated inside, while the outside is first nickel plated then chromium plated.

Because of the nature of this appliance, which makes coffee automatically to the individual's taste, then reduces the current to keep coffee at serving temperature, Revere copper was selected for its high thermal-conductivity. This makes it possible to brew the coffee faster and keep it hot longer, thus saving on current.

Perhaps Revere Copper or some other Revere Metal can be of help in developing or improving your product—cutting your production costs. Why not tell Revere about *your* metal problems? Call the Revere Sales Office nearest you today.

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Measured Load Controls Yield of

BY-PRODUCT COKE OVEN

NEW DESIGN ELIMINATES crossover flue system while maintaining equal generating efficiency for underfiring without counterflow of gas at outside regenerator walls lengthwise of ovens

By PAUL M. PINCKARD
Kalamazoo, Mich.

WHEN gas and coke largely were made in retort benches and beehive ovens at the turn of the century, it was taught that the gas was hopelessly degraded after three hours, within a few inches of the crust of the coke, before emerging therefrom. A few years later text books solemnly warned that the gas produced no more heavy paraffins after the seventh hour.

In those days it was taught and believed that the ultimate hydrocarbon reactions occurred with lightning-like rapidity. This, however, was never true. The reactions being molecular and not ionic, are always relatively slow and hence they can be controlled by temperature. In fact, this is the number one property of hydrocarbons.

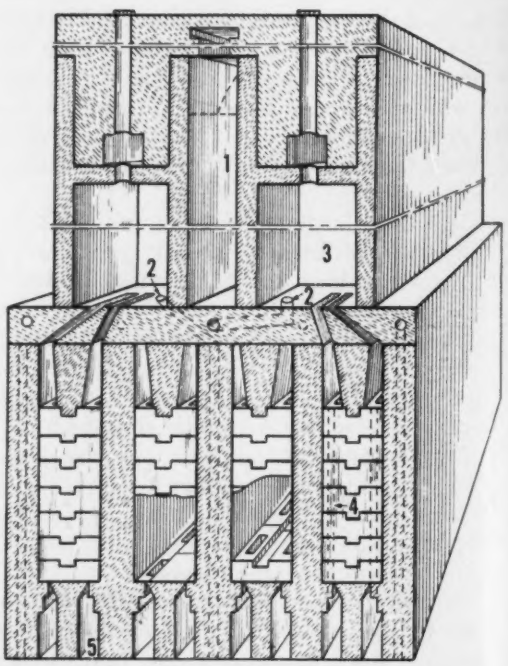
Hence in former years limiting conditions in apparatus and treatment were wrongly taken as limiting factors, inherent in hydrocarbon formation, especially in the illuminants which are rated at 2000 Btu and the methane at 1009 Btu. Other combustibles in the gas are CO at 323.5 and hydrogen at 326.2 Btu. These two gases are not hurt by present practice and the same limitations still receive so much tolerance that many cokemakers recognize them apart from the apparatus which produces the sharply lessened values in Btu in the gases. There are great losses in illuminants and paraffins from the start of coking, which being high, are still not recognized because the best yields are not brought out at any stage of the process.

Deterioration of Gas Quality— Not only is the fourth to seventh hour "bogey" applied to coke oven gas deterioration, but the same deterioration of gas quality at a lower bracket is noted from the 10½ hours to the end on a 15-hour schedule.

To illustrate, take No. 7 oven (at charging time) of a 50-oven battery, pushing on a 15-hour schedule. Oven No. 6 with an intermediate heating wall between will have a charge 10½ hours old, and oven No. 8 alongside the other heating wall intermediate to oven No. 7, will have a charge four and a half hours old. No. 6 will be recharged when the charge in No. 7 is four and a half hours old. In the heating flues between Nos. 6 and 7 ovens, when No. 6 is charged, gas from No. 6 traveling through brick joints into the flues, brings a quick reduction of temperature up to 50° F, the newly charged coal being in the process of distilling much moisture and carbon dioxide.

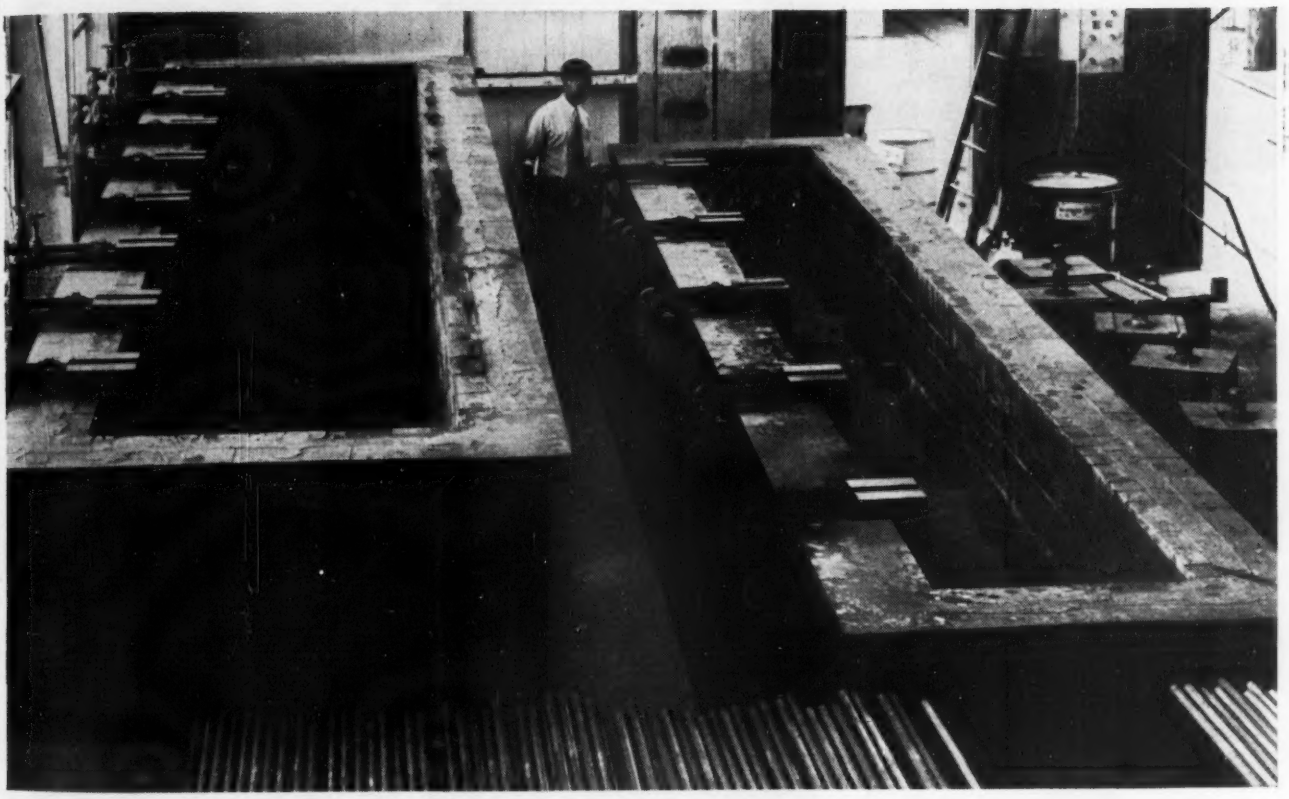
This first influx of moisture and carbon dioxide, modifies to some extent by its cooling action on the flue, the effect on flue pressures which are still resisted in chamber No. 7 by comparatively good oven pressure at four and a half hours. But up to the seventh hour, there is considerable travel of 2300° flue gas from the wall intermediate to No. 6 oven, and the effect on 2000 Btu illuminants and 1009 Btu methane has been devastating. The other low thermal elements, hydrogen 326.2 Btu, and carbon monoxide 323.5 Btu alone have not been hurt.

Temperature Exceeds 1472° F— When the coke in No. 7 oven is 10½ hours old, a charge is dropped into No. 8 oven and there is further devastation to the quality of the gas up to the thirteenth hour, and by then air dilution is considerable. Since the temperature of the gas



Vertical cross sectional view of Pinckard-type by-product coke oven
1—Coking chamber
2—Gas nozzles
3—Vertical flues
4—Checkers
5—Bus flues

HOT ACID VS. "KARBATE" IMPERVIOUS GRAPHITE



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"National" carbon brick are the time-tested standby in handling nitric-hydroflouric acid solutions . . . such as are used in the pickling tanks shown above. For complete information on both "Karbate" impervious graphite, and "National" carbon brick, write to NATIONAL CARBON DIVISION, Union Carbide and Carbon Corporation, Department ST.

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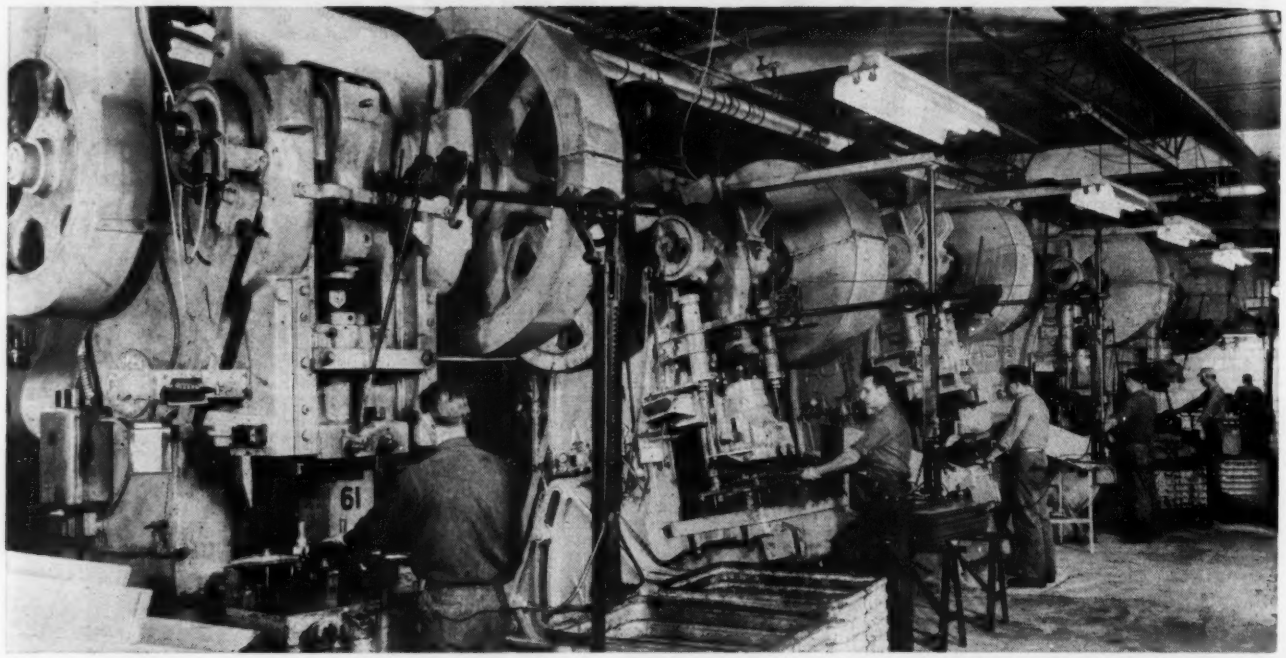
METAL STAMPINGS



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exceeds 1472° F at the free space above the leveled coal and from beginning to end of the coking period, the quality of the gas has been greatly harmed from start to finish. That temperature in itself is harmful to rich gas formation, and especially to the 2000 Btu illuminants and 1009 Btu methane and, therefore, the rate of formation of both has been low of optimum.

In a new by-product oven, shown in the accompanying illustration, a measured load is maintained. Pressure, volume and temperature are controlled by means of circulation gas introduced to the free space of the oven above the leveled charge. And gas only travels from the oven chamber side, through the joints, under maintained pressure, depositing first at the hot flue side of the brick joints, in hot free carbon, and sealing back to the chamber side, while the maintained chamber pressure and measured volume, temperature and pressure prevent hot flue gas intrusion, and permit great latitude in controlling the temperature factors, which can control the products rate of formation.

This fact is the No. 1 property of hydrocarbons, that their reactions being molecular and relatively slow, their rate of formation can be controlled by temperature. Wider flues and uniformly low stack differential evenly distributed along the heating wall, and shorter travel bus flue inlet to bus flue outlet also are important aids in discouraging intrusion of hot flue gases. Such intrusion is destructive of illuminants and paraffin yields, which make for rich or lean gas in proportion that they are protected and their rate of formation is helped or hindered.

Gas Is Controlled—Gas introduced to the oven free space above the leveled charge has controls activated by the pressure in the oven. These controls for the gas are mounted on a "catwalk".

Bypass of the cool roof area brings a reduction in temperature, volume and pressure, and diffused circulation gas tends to control and extend the advantage to the reaction zone.

The basic structure of the new type oven, as will be observed, is of heavy construction. The areas of the outer regenerator walls for the length thereof will have like direction of flows on the two sides of each of these walls, which are placed directly below the floor of the ovens. Therefore, when gas is being preheated for underfiring the outer sections of the regenerator, there will be no counterflow to the waste products going to the stack, and no gas preheated therein can be lost to the stack.

A selective exchange of heat along the heating wall, means that a smaller group for exchange can be built where desired, say at the center, to equalize flue gas friction along the entire heating wall. Maximum pressures thus are equalized in the flues, which lead 2300° F flue gas into the oven charge, passing through the brick joints intermediate of the flues and the oven charges. The width of flue is 26 inches. This will more than help reduce flue pressure maximums, for some of increased heating potential can compensate for a thickening of the flue separation brick, a move which is basic to any efforts to strengthen the oven walls. An unmodified taper brick, for the wall interlock, backed up by rounded wing support is recommended. Wind boxes of thin metal serve as a liner, as well as a mounting for controls. The wind boxes are encased with a poured refractory which saves much labor in patching.

How Covers Operate—Controls of the covers for lead to stack and gas inlet to the outer boxes, are of plunger type and have a gravity lift. Operated in tandem to the covers, there is a delaying action so that one cover in a tandem cannot be raised until the other is lowered. The wind boxes widen outwardly of the regenerator, where it is 5½ inches wide but deep. Velocity in the bus flues never are sluggish, nor are finger bars needed. The top of the horizontal flues are about 6 inches below the top level of the coal which prevents overheating of the reaction above the leveled coal charge.

Travel of hot 2300° F flue gas into coal charges is minimized by flue design, and its intrusion prohibited by controls of pressure, volume and temperature in the chamber side reaction zone. A measured load and maintained pressure, therefore, not only make such hot flue gas intrusion impossible, but insure that the tightly carboned brick joints deposit their carbon nearest the flue side of the joint where the brick is at a higher temperature for decomposition thereby firmly sealing the brick joints backwardly toward the coal chamber. In a few weeks, unprecedented carbon sealing efficiency is noticed and a lessening of gas travel from the flues to the ovens and from the ovens to the flues.

While every application of fuel gas heating is provided, the horizontal gun fired provision with a special fuel gas feed to the outside No. 1 flues to make up for radiation losses is preferred. Fuel gas ducts are placed above the walls directly below the oven floor where there is never any counter flow, and feed to alternate groups of flues in nonparallel groups in adjacent walls on either side of the duct. With No. 1 flue warm, No. 2 will be warm and No. 3 always heated well onwardly. Nozzles are placed at the flue bottom level; No. 1 nozzle could be eliminated with the special feed and the velocity of the gas controlled by a side jet, as it would be in an underjet. It is important that the outside flue radiation at the jamb well be compensated.

The regenerator brick shape can be turned out on present brickmaking machines up to the dimensions of 6 x 16 x 18 inches with a 2-inch groove as shown.

Unmodified taper in the flue separation brick of the wall interlock is recommended with full rounded wing backing up support from a widened flue separation brick, greater width for that brick thus is attained because of the increase of the heating potential made available by the 26-inch flue. Pushing stresses will thus exert less pressure on the flue separation brick and furnishing greater strength.

In the heating walls and underareas, strength and extra years of service are intended. The one and one heating exchange in the center and two and two at the outer flues modify maximum flue pressures.

Comparator Controls Raw Stock

SEPARATION of chemically mixed stock or parts and physically mixed parts is being determined in the chemical laboratory of Woodward Governor Co., Rockford, Ill., by a metals comparator with selective frequency of from 50-10,000 cycles per second. Several sizes of coils for high and low frequencies, as well as a special test head, are being used in the testing procedure.

The company is using the comparator, built by General Electric Co., Schenectady, N. Y., to inspect all raw materials in bar form in order to determine the acceptance of material as to type and uniformity of chemical and/or physical properties. Supplementing the regular chemical testing procedure, the instrument is also being used to select material as to machinability and the determination of plating or coating thickness. It is not limited to inspection of ferrous metals as the magnetic induction of the comparator surface is determined by the resistivity as well as the permeability of the material within the coil.

METAL FORMING NEWS

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OTHER FENN-STANDARD ROLLING MILLS

Fenn-Standard makes rolling mills for the rolling of ingot, rod or strip and are built to your requirements.

Four-High Precision Mills roll stock to uniformly close tolerances.

Three-High Mills are available for rolling rod — grooved rolls reduce billets of ferrous and non-ferrous metals to rod.

Two-High Mills emboss and do general sizing and finishing work.

Roll sizes for these mills vary 1½″ diameter and 1″ face to 16″ diameter and 18″ face. They can be furnished for both hot and cold rolling, or for grading, cross and pinch rolling or forming wire to dimensions.

Roll speeds range from 10′ to 500′ per minute. Numerous attachments are available for special work, making the basic Fenn-Standard Mills highly versatile machines.

Tandem Wire Flattening Mills Speed Output, Cut Costs

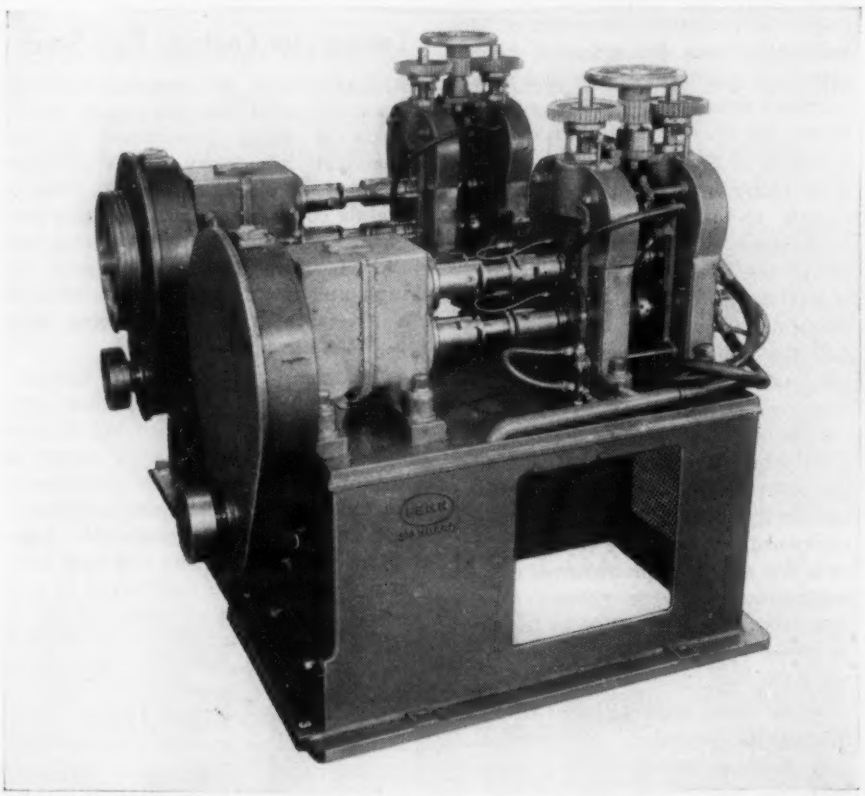
Wire flattening mills which do the complete flattening operation in a single pass, and which operate at speeds up to 2000 feet per minute, are taking over more and more jobs in the metal industries as manufacturers search for new ways to cut production costs and speed output.

Ability to handle ferrous or non-ferrous alloys and stainless steel rapidly to close tolerances enables Fenn-Standard mills to lower unit costs substantially below equivalent work done on single stands.

Up To Five Stands On Tandem Units

The principle of tandem operation saves a great deal of handling and lessens the number of operators required on any given job. Fenn-Standard mills can be obtained in tandem units up to five on a single stand or base. Roll diameters from 3.5″ to 12″ allow these mills to handle the whole range of commerial wire sizes.

Tandem mills provide the most efficient wire flattening method known. Industrial plants have been converting their plants from single stand operation to tandem units to get the benefits of reduced costs and greater output.



Fenn-Standard Tandem Wire Flattening Mill

Precision Engineering Accounts for High Performance of Tandem Mills

Modern design, careful engineering, generous dimensions of parts and close tolerances account for the extraordinary performance of Fenn-Standard tandem mills. Yankee craftsmanship combined with carefully controlled materials help account for their high production rates and minimum maintenance over a long service life.

Roller Bearings are used on roll necks and preloaded ball bearings in pinion stand.

Each mill stand is driven by herringbone pinion stands through universal joints to the roll necks in order to eliminate chatter marks on the work.

Rolls are easily raised and lowered through the individual or simultaneous operation of screw downs.

Rolling speeds are electrically synchronized from stand to stand.

Cooling of rolls is either internal or external at your option.

Roller bearings and pinion stands are lubricated with recirculated oil to deliver clear, cool, oil continuously for minimum friction and longer life.

Idling or power driven edgers for use between stands control widths to close tolerances.

Fenn-Standard edgers have been designed to meet the requirements of rigidity so important to holding small tolerances. The edger rolls are mounted in preloaded ball bearings, lubricated for life, and the preloading principle is carried throughout the entire edger.

Ribbon wind and traversing take-up reels are available.

Hydraulic traversing offers the ultimate in flexibility and the drives produce constant tension winding.

Rotary Swaging Gains Favor as Faster, Better Way to Shape Metal

Increasing numbers of metal working plants are adopting rotary swaging for tapering, forming, reducing and assembly operations because of large savings in time, labor and materials as well as important improvements in the physical properties of the metal being worked.

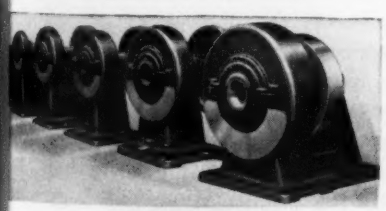
Saves Time and Labor With No Loss of Material

Rotary swaging is a forging process in which tubular or solid bar stock is shaped by means of repeated blows applied by rotating dies. The process develops cylindrical, conical, "necked" and other special shapes *with no waste of material.*

Most swaging operations require only a few seconds. Even on difficult work, the length of time required is much less than that needed to secure equal results by other processes. So simple to use that highly skilled operators are not required.

Other Important Benefits From Swaging

Like forging, swaging improves the grain structure, hardens the material and gives it increased elasticity and tensile strength. The hammering action imparts a high finish to the surface which in most cases need not be given further treatment. A high degree of accuracy is possible. Close tolerances can be held. Tubular parts often develop enough wall thickness to permit threading.



← Fenn-Standard Rotary Swagers are available to handle work as small as .015" to .020" diameter, solid bar stock up to 3¼" diameter and tubular stock up to 6" diameter. Machines with larger capacities can be designed and built to order.

Plant Replaces 5 Rolling Mills With One Tandem Turks Head, Cuts Costs

The high speed and versatility of tandem Turks Heads has enabled many manufacturers to secure remarkable production economies by using them in place of older style equipment.

One manufacturer has replaced five rolling mills with one tandem Turks Head — at comfortable cost savings and with no loss of productive capacity. Others have been able to reduce costly inventory to a minimum number of finished stock sizes because their Fenn-Standard tandem Turks Heads allow them to fill job lot orders more quickly than ever before.

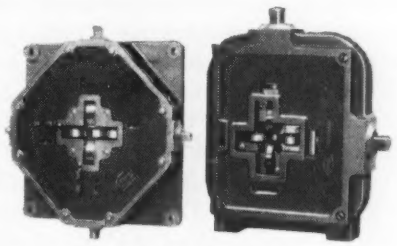
From round wire to finished shape in one pass through tandem Turks Heads has opened up an efficient, low-cost way to form wire and edge strip stock for increasing numbers of manufacturers.

Operation of these machines is fast and simple. The heads can be changed in ten minutes — the work turned out in little time. Fewer sizes of starting rounds are needed — less raw stock is used — waste is cut to the vanishing point — inventory problems are minimized.

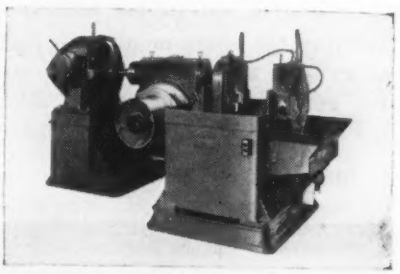
Turks Heads Use No Dies

The work is *rolled* to shape, giving the added benefits of improved metal structure, greater tensile strength, greater accuracy and higher production rates as compared with dies.

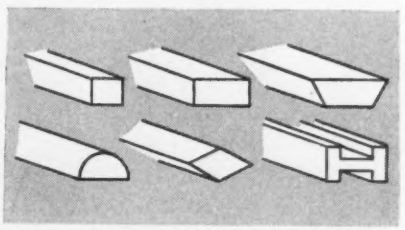
For rectangular sections, short runs and light reductions, Fenn-Standard Universal Type Turks Heads are used. For forming rectangles and special shapes, with long runs and heavy reductions, Plain Type Turks Heads are specified. Material is rolled on both vertical and horizontal planes simultaneously. Close tolerances are maintained.



Left: Plain Type Turks Head.
Right: Universal Type Turks Head.



Fenn-Standard Tandem Turks Head. Handles all round wire in size range .40" to 1.250".



Some cross-sectional shapes obtainable with Fenn-Standard Turks Heads.

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Advertisement

 (*Continued from Page 94*)

ence in the use of 18-8 alloy on ships. The gasoline tanks which the Navy used on ships in 1934 failed badly through pit corrosion. This came as a shock to the alloy casting industry.

After a reasonable experience with this rather empirical approach, producers of these very special stainless alloy castings came to the realization that no one concern could possibly acquire all the technical knowledge and data necessary to guide this development successfully, and that it must be an industry-wide attempt calling for broad study and a far-reaching research program.

To organize such an effort, a meeting of interested parties was held in Pittsburgh early in 1933 to discuss the many problems thus far encountered, and to consider what must be done to correct the complicated situation. Out of this discussion originated a plan for an industry co-operative effort and on June 2, 1933, a meeting was held in New York attended by a group of producers who organized the Alloy Casting Association, of which the writer was appointed the president, and A. R. McAllister, secretary.

The main purpose of this association was the acquiring of factual information through research and market investigation for the proper guidance of the industry in broadening the uses of high alloy cast products, and involving casting design, manufacturing technique, and proper service applications.

During the same month the National Industry Recovery Act was approved, and on Nov. 2, 1933, the first general meeting of the alloy casting industry was held in Washington to discuss a code of fair competition for the alloy casting industry, said code being approved Jan. 30, 1934.

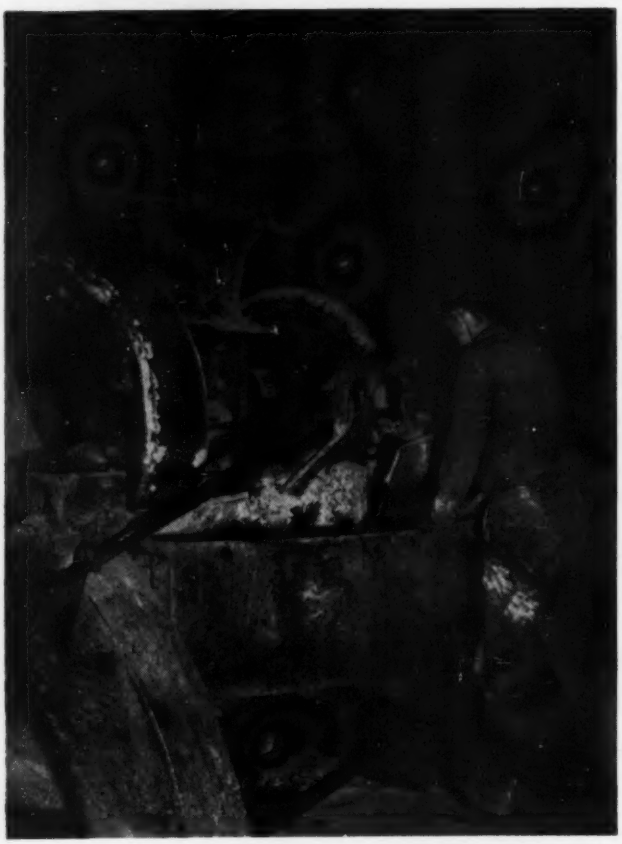

Fig. 18—View of sand milling machine

REPRINTS AVAILABLE

REPRINTS of previous individual chapters in the series "Fundamentals of Steelmaking" now may be obtained by addressing Readers' Service Department, STEEL, 1213 W. Third St., Cleveland 13, O. Prices range from 20 to 75 cents per reprint. Subjects covered over the past few months include:

No. 1, Production of Electric Arc Furnace Steel; No. 2, Scrap Iron and Steel; No. 3, Production of Open Hearth Steel; No. 4, Production of Tool Steel; No. 5, The Art of Roll Pass Design; No. 6, Production of Bessemer Steel; No. 7, Production of Metallurgical Coke and Resultant Coal Chemicals; No. 8, Production of Plates; No. 9, Production of Hot and Cold-Rolled Strip and Sheets; No. 10, Production of Tin Plate; No. 11, Production of Structural Shapes and Rails; No. 12, Production of Butt and Lap Welded Pipe, Conduit and Electric Metallic Tubing; No. 13, Production of Pig Iron; No. 14, Production of Seamless Steel Pipe and Tubes; No. 15, Production of Stainless Steel; No. 16, Iron Ore—Its Mining, Beneficiation and Reserves; No. 17, Transportation and Handling of Iron Ore; No. 18, Production of Wire and Wire Rods; No. 19, Production of Gray Iron Castings; No. 20, Production of Steel Castings.

The code required that a committee be set up to establish product classifications and standardizations for the open price provision set forth in the code. That committee has continued to function since that time, and has rendered an outstanding service in classifying and clarifying the industry's ever-increasing types of products made.

In November, 1934, the NRA Alloy Code Authority, at the request of the Navy Department, authorized the establishment of a committee of metallurgists for the purpose of determining the most suitable analysis for Navy use. This information was to cover specific analyses for particular requirements.

Confusion which followed the committee's attempts to establish such recommendation brought forcibly to all concerned the fact that the basic information was not available, and the committee was unable to take definite action. However, the divergence of opinion, confusion, and absence of generally accepted facts showed clearly the imperative need for pushing the plan for co-operative research.

The immediate problem of pit corrosion study was taken up with the Chemical Foundation, owners of the Strauss patents, and an investigation was begun at Massachusetts Institute of Technology, a study in which the alloy casting industry was asked to co-operate. This did much to demonstrate the value of industry co-operation on technical subjects and aided in establishing an industry level of thinking, which prior thereto was one of the principal handicaps to collective effort.

In October, 1935, the Alloy Casting Association appointed a research committee, instructing it to outline a group research project which was to be supported by the association members.

The difficulties attending the organizing of the co-operative research program were many and difficult of surmounting, however as a result of agreement on the general plan, the first valid contract was made with Battelle Memorial Institute, in November, 1937, covering heat-resistant alloys; and in February, 1938,

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two contracts were entered into, one covering heat-resistant, and one covering corrosion resistant castings. These contracts were supported by the then thirteen member companies.

That research effort has continued since that date and an enormous amount of helpful information obtained, utilized and broadcast. It is today recognized as one of the most important and forward-looking industrial research programs ever instituted and has involved an outlay of several hundred thousand dollars.

Many changes have been required in the operation of industry affairs, including the name of the organization, which in July, 1940, became the Alloy Casting Institute.

During the more than ten years of continuous research effort, a workable and satisfactory method of collaboration between the industry and the Battelle staff has been developed. Broad programs are discussed by the Technical Research Committee (to which each member company appoints one representative of the institute) and the Battelle staff, based on the present and possible future requirements as may be indicated in both our scientific and our technical trends.

Details of the investigation are left to direction of the Battelle staff, which is guided and counseled by small steering committees appointed by the Technical Committee chairman. This procedure has brought forth many accomplishments of outstanding merit and purpose, and warrants an optimistic future and outlook.

The institute is now comprised of 27 members, who produce better than 85 per cent of all high alloy production, which in 1946 amounted to a total of 37,409,900 pounds.

The membership, through experience, has gained in ability to co-operate in the advance of scientific knowledge as applied to the high alloy field, and will doubtless prove a potent force in future trends, technological and otherwise.

These new alloy castings, frequently of unique design and qualities, brought many new and previously unknown problems to the foundry, of manufacturing, critical inspection and testing requirements. For example, a part for an airplane power unit operating at high temperature and subject to thermal shock, must be, first, of an alloy of proven high temperature physical and creep properties to establish the limiting creep stress values required and within a fixed high alloy analysis range, closely controlled; second, within close dimensional tolerances as cast; third, of proper soundness and freedom from any type of objectionable defect which will cause starting points of failure, and is subject to both 100 per cent Zyglo and x-ray examination.

These unique departures from previous engineering, founding and metallurgical standards challenged the vision, ingenuity, and resourcefulness of the foundryman, who rose to the situation in true American fashion.

Among the many developments came the centrifugal method with new types of mold materials and

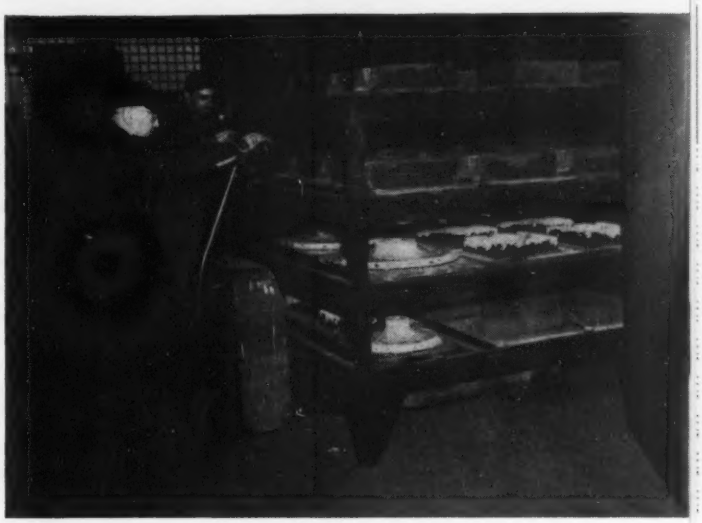


Fig. 19—Placing cores in oven for baking

practices, new pattern designs and planning; precision castings; the scientific study and application of sands and other substances, new mechanical methods of sand preparation, treatment and handling; advanced foundry engineering co-ordinating metallurgical and project engineering approach to casting design, and all shot through with most intimate details and guided by the ever present need of control—control of every important element being essential.

The aforesaid procedure in a small way explains why high stainless corrosion-resistant and heat-enduring alloy castings have made possible the truly remarkable advance in the technological and process industries during the past 25 years, and supports our statement that the stainless history is woven into many of our major achievements, which have been built around and depend almost entirely upon their outstanding characteristics.

Fig. 20—Hydrostatic tests being given a finished casting here

Gear Surface Finish

(*Concluded from Page 89*)

by a plug gage slightly longer than the part. Saving with this setup over the old method is at least 10 cents per gear, on time alone.

Honing of the cluster gears proved to be an efficient method of generating bearing surfaces on hardened parts. Next step was to adapt the same operation to the finishing of the bearing surfaces in splined gears. The old method of finishing the spline was to anneal the bearing surface after the gear was hardened and then broach to remove the distortion resulting from heat treating. This left a soft, torn surface that had a tendency to gall and pick up on shaft.

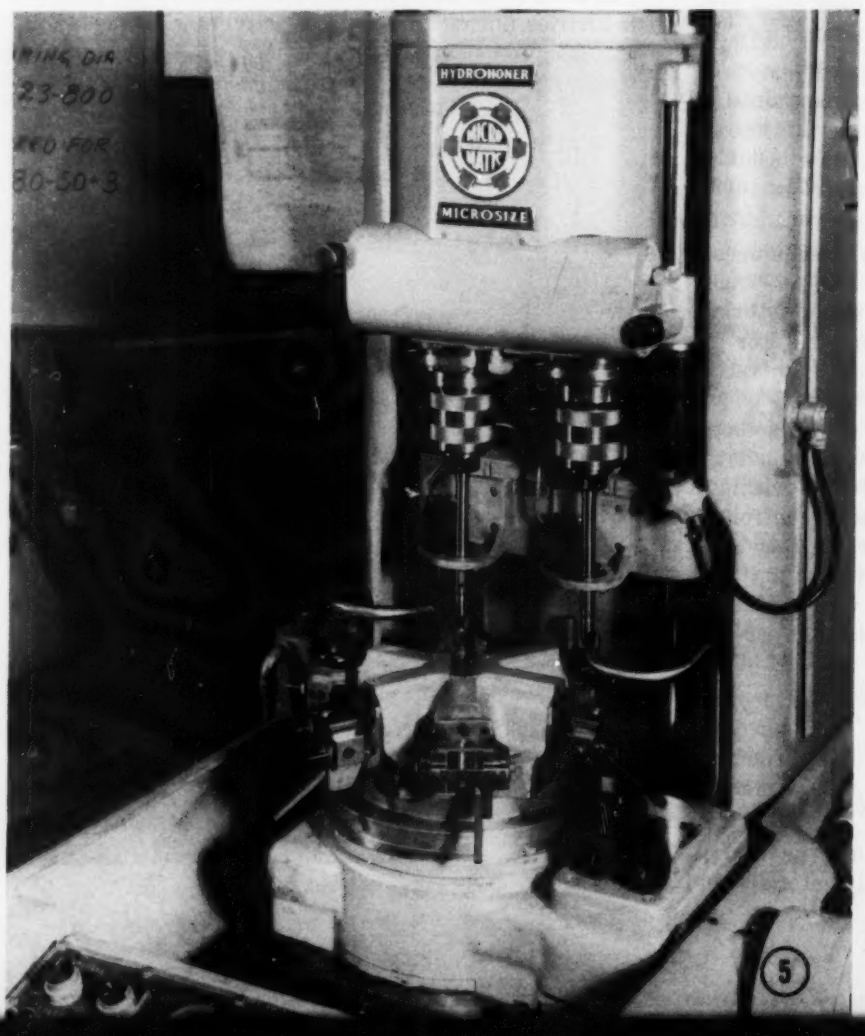
However, honing of the splines presented several problems. To cut efficiently, the stones must be self dressing, and to generate an accurate cylinder this dressing action must be uniform over the full surface of all the stones. In the conventional honing application this is accomplished by combining a rotating and reciprocating motion and adjusting the stroke so full surface of all stones does an equal amount of abrading.

Oscillating Motion—In the spline, the tool cannot be rotated since each stone is confined to the surface of one spline. To overcome this, a heavy-duty honing machine was equipped with an oscillating motion in place of the rotation, Fig. 3. The tools were designed with stones approximately one-half as wide as the spline, one stone for each spline. The gear is located in a fixture by a disappearing locating plug and clamped in position by a cam.

The hardened spline distorts during hardening so it is out of round and tapered from 0.002 to 0.008-inch. As the tool enters the hole only two or three stones contact the surface in the small section. The stones oscillate and reciprocate across the surfaces describing a cross hatch pattern. After a predetermined time cycle the tool is withdrawn and the part is indexed one spline. Another set of stones now abrades the small section of the spline. The indexing and abrading continue until the spline is round, straight and to size. Then, the control stops the operation and withdraws the tool.

As surface finish of 20 microinch r.m.s. or less is developed, size and geometry is held to less than 0.0003-inch tolerance and the gear can be fitted to the shaft in 0.0002-inch increments.

Fig. 5—Cluster gears are clamped in the simple fixture by three cam-operated fingers



LETTERS
to the Editors

That Question Looms Again

Will you please advise us, if possible, the names and addresses of manufacturers of looms or machines for weaving wire into chain link fencing? We understand some of these machines are made in foreign countries. If you have the names and addresses of these, we would also like to have them.

L. J. White
Vice President
Southern Steel Co.
San Antonio, Tex.

Names of domestic manufacturers are being sent. We know of no foreign manufacturers of this type of equipment.—The Editors

Tank Information

I understand that there was an article appearing in one of your recent issues furnishing information regarding the fabricating and shipping of knocked down steel tanks. As one of your subscribers we would indeed appreciate it if you can locate this article and forward us three of these publications.

C. R. Huston
American Steel Works
Kansas City, Mo.

Article referred to concerns the icosasphere, developed by Pittsburgh-Des Moines Steel Co. and Mellon Institute of Industrial Research, both of Pittsburgh. Requested tearsheets of the article from the Dec. 19, 1949, issue are being sent.—The Editors

Facts and Figures

The January 2nd issue of STEEL carried a 32-page section on metalworking facts and figures. Many of these tables are of considerable value to us as references and we are wondering if by any chance you would have some tearsheets available which you could send us. We are particularly interested in pages 127, 129, 130, 132, 133 and 134.

W. J. Bornholdt
Assistant Purchasing Agent
Caterpillar Tractor Co.
Peoria, Ill.

We are sending to you, and will send to any of our readers, copies of this 32-page insert from STEEL's Metalworking Yearbook.—(See letter below)—The Editors

'Twas Result of Hard Work

The Jan. 2 issue of STEEL richly deserves special comment. I don't know when we have seen a special edition of a magazine handled as excellently as this one. Congratulations to you and your associates on a superb job. For those of us who should know more about the steel industry as a whole, the news summary and statistics sections are made to order.

Robert McDevitt
Pendray & Leibert
New York, N. Y.

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15 New POWER SIZES

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● Dependably safe! That's this 4-girder Alliance Ladle Crane. With a wide safety factor, it's engineered to operate 24 hours daily year after year with unbelievable minimum of maintenance. This powerful crane is equipped with an auxiliary trolley having a 60-ton and 20-ton hoist, safety rope reeving and synchronized worm drive, and a safety compartment containing a duplicate bridge master control. This lets the operator move the crane in safety in case hot metal is accidentally spilled. Another Alliance safety feature is the enclosed stairway leading from the cab to footwalk on the crane girder.

Known the world over, Alliance Cranes handle more hot metal than any other make. Alliance has constructed the largest cranes ever built considering height and capacity of lift.

Think now about giving your plant more lifting power by developing new cranes or reconverting old ones.

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CRANE

THE ALLIANCE MACHINE COMPANY

MAIN OFFICE
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New Products and Equipment

Vertical Speed Reducer Drive

Heavier gear shaft bearings and increased bearing span provide the type NU and ND vertical gear shaft worm gear speed reducers, made by Cleveland Worm & Gear Co., 3270 E. 80th St., Cleveland 4, O., with the capacity to withstand externally applied loads on the gear shaft, whether extended upward or downward. A composition face-type seal prevents oil

leakage at the worm shaft extension. Box-type housing is a gray-iron casting having liberal wall and flange sections. Gear shafts of increased diameter are supported by heavy tapered roller bearings.

On the type NU unit, lubricating pump is mounted directly on the lower end of the gear shaft, delivering oil through a drilled passage to the upper bearing. On the ND unit, the pump is located on the upper end of the gear shaft. Units are offered in several sizes for various types of application.

Check No. 1 on Reply Card for more Details

Measures Short Time Intervals

A recording chronograph which will measure and record short intervals of time from 0 to 0.033-second or longer where the time interval is approximately known and where the time can be indicated by the breaking of a circuit, is being produced by Theodore M. Long, 40 S. Bridge St., Somerville, N. J. Device may be used for the measurement of accelerations and velocities of extremely high speed rotating and reciprocating machinery.

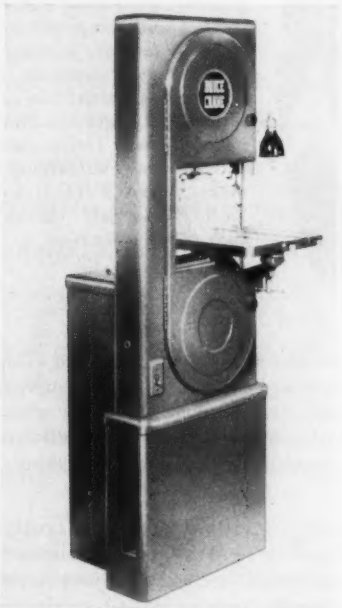
Instrument consists of a circular chart, driven at 1800 rpm by a synchronous motor. Breaking of an electrical circuit causes a perforation to be burned in the chart. Two of these marking circuits are provided so that the relative difference in time between two positions of a moving member may be indicated. A chart is read by a scale marked in milliseconds.

Check No. 2 on Reply Card for more Details

Combination Saw-Band Filer

Speeds ranging from 92 to 4100 blade feet per minute are incorporated in the combination contour saw-band filer built by Boice Crane Co., 930 W. Central, Toledo 6, O. A quick-change gear box and step pulleys make any one of eight speeds instantly and easily available.

The 15 x 15½-inch heavy ribbed cast work table is surface ground



to close machine tool limits and mounted on two cast trunnions. Table tilts 45 degrees to the right and 10 degrees to the left. Throat depth is 13½ inches and vertical clearance from the guide to the work table while sawing is 8⅝ inches and 4 inches or more while filing. Four saw blade widths and two file widths may be used.

Check No. 3 on Reply Card for more Details

Diesel Engine Line

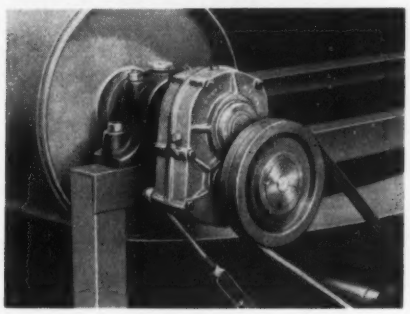
Available from Superior Engine Division of the National Supply Co., Springfield, O., is a line of diesel engines for stationary applications having horsepower ratings from 175 to 1500. Six and eight-cylinder types, supercharged or nonsupercharged have ratings from 120 to 1055 kw. Lubrication system is of the force feed, dry sump type which uses either single or two-pump system as required.

Dry and oil cooled pistons are available. Engines may be adapted to burning either oil, natural gas, or combustible by-product gases, with equal facility and efficiency. The supercharging is automatic at all speeds and loads for greater power output from the same engine mechanism. Crankshafts are forged from a solid billet of heat-treated steel and machined, while camshaft is made in one piece and supported in alignment by bronze bearings. It is driven by an oversize prestretched, multiple strand roller chain with adjustable roller bearing idlers.

Check No. 4 on Reply Card for more Details

Packaged Speed Reducer

Mounting directly on the shaft to be driven is the Torque-Arm speed reducer offered by Dodge Mfg. Corp., Mishawaka, Ind. Designed as a packaged item available from distributors' stocks, the speed reducer is designed primarily for conveyors, bucket elevators, agitators, mixers and similar machinery. Unit consists of a reducer with a fixed ratio of 15 to 1, driven by a motor through V-belt on flat belt drives. Output speed is from 13 to 133 rpm, changes



being made through the use of stock sheaves.

Torque arm anchors the reducer and provides easy adjustment of the belt tension through the use of a turn buckle. When it is required to prevent reversal of the load, a backstop is available for installation in the input shaft. Reducer is made in six sizes with capacities up to 28.5 hp.

Check No. 5 on Reply Card for more Details

Permits Charging Two Batteries

Hertner Electric Co., 12690 Elmwood Ave., Cleveland 11, O., is producing the double duty charge control unit, an accessory for automatically charging two batteries from a single-circuit motor generator battery charger made by the company. It is possible to charge two like batteries automatically, resulting in twice the

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Brass coated THOMAS STRIP, for example, eliminates much costly surface preparation, cleaning, plating, buffing . . . and gives fabricated parts a uniform brass coating *inside and out.* The coating lends itself readily to forming and drawing and to production of rolled sections. It affords good protection against corrosion to parts in process. Its surface can be readily oxidized to provide a variety of decorative effects. Available natural, planished and buffed, it serves both as the final product finish and as an ideal base for further plating.

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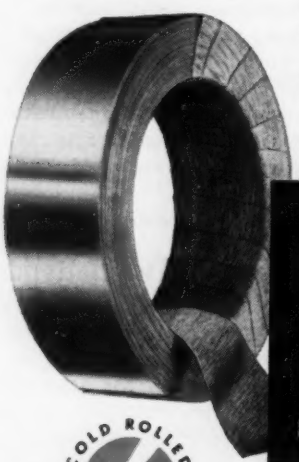

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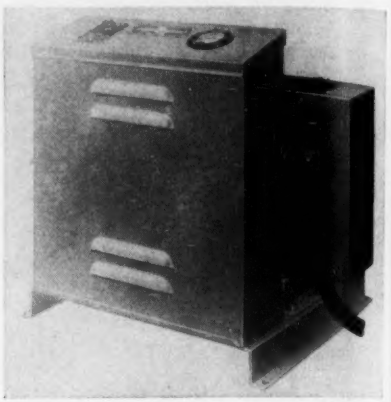
charging capacity from one motor generator charger. The double duty unit is housed in a compact steel box mounted on the charger control cabinet and can be provided already attached to either a KX or HX charger at the time of purchase.

Operation is by plugging one of the similar batteries to the charger and the other to the double duty unit.



After turning the two control switches the batteries are charged consecutively and automatically without attention. Two discharged lead-acid batteries may be recharged in 16 hours or less and two Edison batteries in 14 hours or less.

Check No. 6 on Reply Card for more Details

Bladeless Impeller Pumps

Produced in a wide variety of sizes to cover an extensive capacity-head range bladeless sewage and trash pumps, made by Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill. Pumps are made in both vertical and horizontal shaft types with manganese alloy steel shafts and casings designed for handling coarse unscreened sewage and other liquids containing large solids.

Bladeless impeller is attached to the shaft by means of a thread which is machined counter to the rotation. A suction head serves to direct the fluid into the entrance of the impeller. Bearings are of proportions adequate to handle all radial and thrust loads and are mounted to assure permanent alignment of shaft and impeller. Housings contain sufficient grease for several months of bearing operation.

Check No. 7 on Reply Card for more Details

• • •

INDUSTRIAL TIRES: General Tire & Rubber Co., Akron, O., offers five types of industrial tires: Silent grip for rolling and handling in low or high speed service; traction tread for use where maximum traction is required to move full loads; cleated

TOLEDO, OHIO PLANT NO. 1

7

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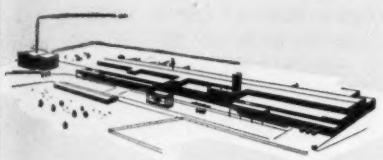

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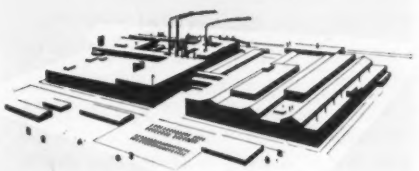

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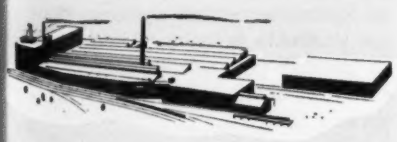

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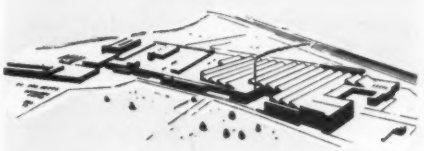

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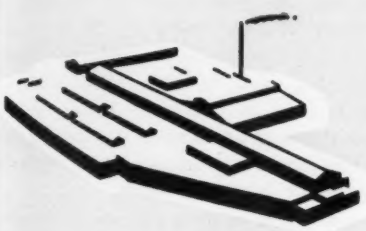

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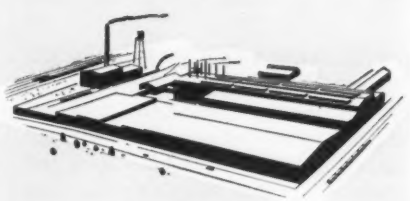

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rib, rolls easy on hard surfaces; cleated, angle-action traction for power-driven, hand-operated cultivators, mowers and rib tread, high flotation wheelbarrow tire with non-skid tread for slippery surfaces. Rim diameters of 2, 4, 6, 8 and 10 inches are available.

Check No. 8 on Reply Card for more Details

FOR WELDING JOINTS: A new improved arc welding electrode, the W-22 (AWS class E 6010) a reverse polarity direct current rod is announced by General Electric's Apparatus Division, Schenectady 5, N. Y. It is designed for vertical and overhead welding of all types of joints in mild steel. Because of its penetrating arc, the W-22 is suited for welding galvanized plate stock.

Check No. 9 on Reply Card for more Details

CONTROL STATIONS: A new line of Oil-Tite control stations and units is available from Westinghouse Electric Corp., Pittsburgh 30, Pa. Designed for machine tool control and other heavy-duty installations, the units can be used in any combination in the stations. Units and nameplates can be rotated 90, 180 or 270 degrees to enable mounting in any position. Terminals on contact block are reversible for front or rear connection.

Check No. 10 on Reply Card for more Details

NONLUBRICATED VALVE: A nonlubricated cylindrical plug industrial control valve providing leakproof shutoff while eliminating contamination, has been developed by Minneapolis-Honeywell Regulator Co., Minneapolis, Minn. The new design includes a permanent seal at the plug stem, sealing packing at the base of the plug and a fixed load spring.

Check No. 11 on Reply Card for more Details

LIGHTWEIGHT DRILL: A new drill weighing 4¼ pounds and measuring 8¾ inches overall length, is announced by Cummins Portable Tools, Chicago 40, Ill. The capacity is ¼-inch in metal and ½-inch in wood. No load speed is 1300 rpm. Drill is equipped with Jacobs model 7B geared chuck.

Check No. 12 on Reply Card for more Details

LUBRICATES BEARINGS: Underfeed oiler for lubricating bearings and shafts requiring a very small amount of oil are introduced by Trico Fuse Mfg. Co., Milwaukee 12, Wis. Oiler is mounted at bottom of bearing. One end of the solid felt wick is held in contact with shaft by positive spring action; the other end rests at the bottom of the oil reservoir. It is available in 1, 2 and 4 ounce capacities.

Check No. 13 on Reply Card for more Details

ADJUSTABLE STORAGE RACK: Palmer-Shile Co., Detroit 27, Mich., introduces an adjustable storage rack for platform boxes and pallets. Track channel runners are adjustable to any width making possible storage of several boxes or pallets of various sizes.

Check No. 14 on Reply Card for more Details

TOOL HOLDER: Kennametal Inc., Latrobe, Pa., announces a new and improved Kennamatic tool holder. New features include broach construction which encloses the insert; solid backing for insert in direction of cutting forces; heat treated alloy steel shank; large hollow backup screw and improved clamping.

Check No. 15 on Reply Card for more Details

BRONZE BARS: An expanded line of cored and solid Tiger bronze bars in all popular sizes, both rough and machined, is announced by National Bearing Division of American Brake Shoe Co., St. Louis 10, Mo. Tiger bronze provides a smooth, antifrictional bearing surface.

Check No. 16 on Reply Card for more Details

TURNS DIAMONDS: Citco hydraulic diamond turner, model 1002-A, turns and holds diamond rigidly by hydraulic means, generates on the diamond a definite and consistent sharp edge in any one of three ranges. Made by Cleveland Industrial Tool Corp., Cleveland, O., unit repositions diamond every 3½, 7 or 10½ degrees.

Check No. 17 on Reply Card for more Details

BROACH SETS: Kase Machine Co., Cleveland 19, O., announces two new complete broach sets. Tool room set No. 10 contains six different Glenny push broaches. Sizes included are ⅜, ½, ⅝, ¾, ⅞ and 1-inch diameter broaches. Set No. 15 contains 10 broaches including ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1⅜ and 1½-inch broaches.

Check No. 18 on Reply Card for more Details

FINE COAL DRYER: McNally Pittsburg Mfg. Corp., Pittsburg, Kans., offers an improved McNally Carpenter centrifugal fine coal dryer. Screens are held in place with clamps and set screws. Wearing plates are held in place with dogs. Unit is adapted for wet fine coals up to ⅜ x 0-inch.

Check No. 19 on Reply Card for more Details

HYDRAULIC CYLINDERS: Series LA hydraulic (oil) cylinders, announced by Vickers Inc., Detroit, Mich., are available in 12 standard bores from 1 to 8 inches and 12 standard mounting arrangements. Features of the cylinders include multiple piping connection positions, universal mounting positions, self-adjusting packings and adjustable hydraulic cushions.

Check No. 20 on Reply Card for more Details

BULLDOZERS: For Allis-Chalmers HD-5 tractors, a new line of bulldozers and gradebuilders has been developed by Baker Mfg. Co., Springfield, Ill. These are hydraulic controlled through twin hydraulic cylinders mounted at the front of the engine frame. Both units can be mounted close to the radiator so as to maintain tractor balance and stability.

Check No. 21 on Reply Card for more Details

FOR HIGH PRESSURE SYSTEMS: VR series adjustable differential type relief valve is offered by Hydraulic Equipment Co., Cleveland 17, O. It is designed for use in high pressure oil hydraulic control systems. Valves are available in capacities from 5 to 80 gallons per minute and in pressure operating ranges between 400 psi and 1650 psi.

Check No. 22 on Reply Card for more Details

HANDLES STEEL PLATES: An adjustable plate sling, designed for handling steel plates in 4, 5 or 6 foot widths, is introduced by Woodhouse Chain Works, Trenton, N. J. Adjustment is made possible by locating the heat treated alloy hook in different end links. This permits constant maintenance of the 45 degree chain leg angle. Safe working capacity is 8800 pounds.

Check No. 23 on Reply Card for more Details

DRY-TYPE TRANSFORMERS: An improved line of dry type general purpose lighting transformers is announced by Marcus Transformer Co. Inc., Hillside 5, N. J. Changes have been made which permit greater circulation of air through and around transformer; built in wiring compartment has been enlarged and amount of available knockouts have been increased. Type C is available in single and 3 phase ratings.

Check No. 24 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

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Helpful Literature

75. Packaging

Gerrard Steel Strapping Co.—20-page illustrated catalog No. 5 depicts various materials and tools for use in packaging and shipping, such as round steel strapping, metal strapping machines of manual and semiautomatic design for standard and heavy duty applications and auxiliary tools, accessories and containers.

76. Rotary Feed Table

Bellows Co.—8-page illustrated bulletin T-25 concerns air-powered rotary table for feeding of work pieces to machine tools. Positive-locking unit consists of 10-in. diameter table top rotated and accurately indexed by either manual, mechanical or electrically operated air motor. Standard table is adjustable to 4, 6, 8, 12 or 24 positions.

77. Roller Chain & Sprockets

Link-Belt Co.—198-page illustrated data book 1957-A is reference guide to power transmission chains and sprockets, conveyor chains and sprockets, special chains and other products. Data on application, selection, arrangements, maintenance and ordering are tabulated. General index and grouped engineering data facilitate use.

78. Combustion Unit

Boder Scientific Co.—4-page illustrated catalog section B-4912 describes Lindberg high frequency combustion unit for ignition of samples in carbon and sulphur determinations. Temperatures exceeding 3000° F are obtainable with this unit which is heated by induction.

79. Roller Dies

American Roller Die Corp.—16-page illustrated folder describes line of roller dies, roll forming machinery, special production machinery and flying shear and cutoff machines. Design, manufacturing and special facilities are discussed also.

80. Rust Prevention

Oakite Products, Inc. — 16-page pocket-size booklet No. F 7708 discusses ways to prevent rust formation with special protective oil. Various strategic points in production process are covered including, preparation, fabrication, shipping and storage.

81. Corrosion-Resisting Steel

Bethlehem Steel Co.—52-page illustrated catalog No. 259 discusses Mayari R low-alloy steel for applications requiring light weight, high strength and corrosion-resistance. It is suitable for use in transportation, mining, manufacturing, material handling, building, air conditioning, power generation and other fields.

82. Machine Tools

Cincinnati Milling Machine Co. & Cincinnati Grinders Inc.—48-page illustrated publication No. M-1684 contains descriptions and specifications of machines for milling, die sinking, broaching, cutter and tool grinding, optical projection, profile grinding, precision grinding, centerless lapping, and flame hardening. Also discussed are various attachments and cutting fluid.

83. Vinyl Finishes

Gates Engineering Co.—4-page illustrated folder "Gates Vinyl Finishes and Coatings" shows industrial, maintenance and marine applications of these protective finishes. Various products are listed and uses of each explained.

84. Cold-Finished Steels

Jones & Laughlin Steel Corp.—16-page illustrated booklet "You Can Make Them Better with Cold-Finished Jalcase" discusses characteristics of ten low and high carbon steels. Fundamental advantages are easy machinability, minimum distortion, fast heat treatment, high wear resistance and good mechanical properties.

85. Motor Control

Allen-Bradley Co. — 76-page illustrated Handy Catalog, fourth edition, lists various accessories and components for motor control including manual and magnetic across-the-line starting switches, reduced voltage starters, control relays, synchronous starters, high voltage starters and similar equipment for direct current motor control.

86. Bronze Products

Johnson Bronze Co.—84-page illustrated book No. 500 reviews line of bronze bushings, bearings, bar bronze and babbitt. Described are general purpose bearings, oil grooving, universal cored bars, solid and hexagon bars, graphite bearings, electric motor bearings and tin and lead-base babbitt.

87. Perforated Metal Products

Diamond Mfg. Co.—24-page illustrated catalog No. 35 and 4-page folder present information on perforated metals and perforated metal products for cleaning, sizing, separating and refining various products; for decorative and ornamental uses; and for use as machinery guards.

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HELPFUL LITERATURE

88. Scrap Metal Baler

Dempster Bros. Inc.—6-page illustrated form 128-125-A describes Dempster Balester hydraulic scrap metal press. Model 128 turn out bales at rate of 1½ to 2 tons per hour. Standard bale measures approximately 10 x 12 x 16 in., but charging box can be converted to make smaller size bales. Model 125 portable press delivers 1 to 1½ tons per hour and produces same sizes bales as model 128. Both are equipped with standard 30-hp electric motor, ejector cylinder and Skip-Pan loader.

89. Horizontal Boring Mills

Cincinnati Gilbert Machine Tool Co.—8-page illustrated bulletin 1049 is devoted to unusual operations performed with horizontal boring mills. Case-history type publication depicts and describes variety of machining operations handled by unit.

90. Steel Rings

Dresser Industries, Inc., Dresser Mfg. Div.—Illustrated folder "If You Can See Your Product As Rings . . ." explains manufacturing processes involved in fabrication of stainless and other steel rings, motor frame assemblies and wide variety of other ring shapes and weldments.

91. Flexible Couplings

Morse Chain Co.—24-page illustrated catalog "Morse Morflex Flexible Couplings" presents details on line of couplings which are torsionally flexible, isolate vibration, cushion shock, compensate for misalignment and require no lubrication. In addition, they are impervious to water, dirt, oil and all weather conditions.

92. Hydraulic Weighing Systems

Baldwin Locomotive Works—20-page illustratated bulletin No. 303 depicts portable hydraulic weighing system components for varied applications in industrial plants and testing laboratories. They include Emery hydraulic cells ranging in capacity from 1000 to 100,000 lb for compression and tension loads and crane scales and portable cells with integral Emery Bourdon type indicators.

93. Portable Elevating Table

Hamilton Tool Co.—4-page illustrated bulletin No. P-50 describes three standard models of Portalvator portable height-adjustable table or work bench having capacities of 1000, 2000 and 5000 lb. It provides three table surfaces, has four-point support, is self-locking to any height, and has floor lock and antifriction casters.

94. Electric Fans

Emerson Electric Mfg. Co.—32-page illustrated 1950 catalog No. X6549 gives design, construction features, and performance data on various types of desk and stand fans; air circulators; ceiling fans; kitchen ventilators; and exhaust, attic and window fans.

95. Service Floors

United Laboratories, Inc.—6-page illustrated form FF presents information on four flooring materials designed for specific service. Special-duty materials described are Plastic Rock traffic flooring, Sylox resilient oil-resistant indoor material, Quartex heavy-duty concrete resurfacer and Tampatch compression-hardening patching product.

96. Space Heaters

Dravo Corp. — 6-page illustrated bulletin 520 is descriptive of Counterflo 22,000-cfm warm air space heaters. Besides primary purpose of providing heat for buildings, units can be used for year-round ventilating, process drying, tempering make-up air and heat curing.

97. Automatic Screw Slotters

Waterbury Farrel Foundry & Machine Co.—8-page illustrated booklet No. 925-A explains construction features of screw slotting machines which are built in four standard sizes ranging in capacity from No. 5 to 30 machine screws having maximum shank lengths from 1 to 4 in. Production rate is infinitely variable and is regulated by small handwheel and graduated scale.

98. Fork Lift Truck

Baker-Raulang Co., Baker Industrial Truck Div.—4-page illustrated bulletin No. 1311 presents details on type FT fork truck which has capacity of 4000-lb load 48 in. long. Powered by battery, it has no-load travel speed of 545 fpm and lift of 36 fpm.

99. Metal Working Machinery

Kling Bros. Engineering Works—4-page illustrated circular "Kling Metal Working Machinery" outlines features and uses of various models in line. Described are angle bending rolls; bulldozers; downstroke friction saws; combination shear, punch and coper; guillotine type bar shears; double angle shears; vertical and horizontal punches; power bar bender; horizontal plate bending rolls; combined punch and beam benders; and high speed friction saws.

100. Stainless Steel

Crucible Steel Co. of America—4-page illustrated data sheet DS147 presents information on Rezistal 302B stainless steel and its typical applications. Recommendations for forging, annealing, hardening, forming, machining and welding are given also.

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10	30	50	70	90
11	31	51	71	91
12	32	52	72	92
13	33	53	73	93
14	34	54	74	94
15	35	55	75	95
16	36	56	76	96
17	37	57	77	97
18	38	58	78	98
19	39	59	79	99
20	40	60	80	100

STEEL 2-20-50
Penton Building, Cleveland 13, Ohio

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Market Summary

CONTINUED high-level steelmaking belies the precarious situation the industry faces because of the coal strike. Additional blast furnaces have been banked. More are scheduled to go down this week. Severe curtailment in ingot production by Mar. 1 is indicated unless the coal supply improves quickly. Already some curtailments in open-hearth and bessemer converter operations have been effected. Hope that the coal strike will begin to break up this week has encouraged producers to maintain ingot operations in the face of the alarming supply outlook.

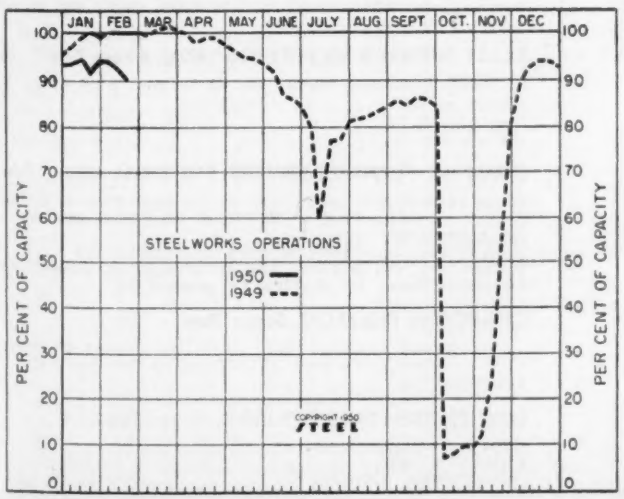
OPERATIONS—National ingot rate fell 1½ points last week to 90 per cent. This is the lowest level since November when the industry was rebounding from the steel strike. Operating declines last week included: 18 points at Birmingham to 82 per cent; 10 points in Wheeling to 91; 7 points in St. Louis to 77.5; 2 points in Youngstown to 90; 1 point in Detroit to 103; 1 point in eastern Pennsylvania to 75. The Chicago and Cleveland rates rose 3 points from revised rates the preceding week to 97.5 and 99.5, respectively. The Pittsburgh rate also advanced ½ point to 95.5.

DEMAND—The seriousness of the coal situation is retarding protective ordering of steel. Pressure for tonnage is definitely stronger, especially for flat-rolled products, but no frantic rush to build inventories is seen. Many consumers feel the coal situation now is so bad the deadlock is bound to be broken soon. Some look for a breakup of the strike this week. The many labor crises over recent years, especially in coal, have hardened buyers to threatened supply shortages. Large steel inventories would mean little should the coal strike continue and metalworking shops be forced down by lack of power. Indicative of the quiescent attitude of consumers, absence of protective ordering extends even to the warehouses.

SUPPLY—With pressure for sheets and strip heavier, supply conditions are tightening more. Most producers are sold out for first half. The oversold position of some sellers is cause for criticism from customers who feel they are not being allocated sufficient tonnage. All signs point to a tight market in flat-rolled into third quarter. Bars are moving in good volume but some sellers expect an easing in demand soon. Bars are available for shipment in four to six weeks. Plates are plentiful and, in some cases, can be had within two weeks. Structurals are in fairly easy supply but with an active building season shaping up noticeable tightening is indicated ahead.

PRICES—Except for minor adjustments in base prices and extras, the steel markets are featureless pricewise. Generally, the higher levels recently effected are firmly established, but considerable price shading on fabricated structurals and reinforcing bars is reported. And a West Coast interest last week cut alloy billets, blooms and slabs $2 per ton. An eastern producer was reported quoting merchant pig iron $1 per ton off. Competition from abroad is increasing. Japanese bolts and nuts are offered considerably under the domestic price level. Foreign nails are available at $2 per keg under the going market in the East. Elsewhere on the price front, the advance of $1 on oven coke initiated at Chicago has spread to other areas. Additional sellers of ladle brick have raised prices. Despite absence of heavy demand for steelmaking and foundry grades, scrap prices appear a trifle stronger at some points.

COMPOSITES—STEEL's price composite on steelmaking scrap rose to $27.67 from $27.42, while those on pig iron held unchanged at $46.47 for No. 2 foundry, $45.97 for basic, and $47.27 for malleable. The arithmetical finished steel price composite held steady at $93 and the weighted finished steel price index at 156.13.



DISTRICT STEEL RATES

Percentage of Ingot Capacity Engaged in Leading Districts

	Week Ended Feb. 18	Change	Same Week 1949	Same Week 1948
Pittsburgh	95.5	+ 0.5	99.5	91
Chicago	97.5	— 3*	98.5	92.5
Eastern Pa.	75	— 1	97	91
Youngstown	90	— 2	105	102
Wheeling	91	—10	92.5	90
Cleveland	99.5	+ 3*	100.5	95
Buffalo	101.5	None	104	86
Birmingham	82	—18	100	100
New England	80	None	89	83
Cincinnati	101	None	103	90
St. Louis	77.5	— 7	89.5	82.5
Detroit	103	— 1	106	89
Western	85.5	None	..	..
Estimated national rate	90	— 1.5	100	93.5

Based on weekly steelmaking capacity of 1,906,267 net tons for 1950; 1,843,516 net tons for 1949; 1,802,476 net tons for 1948.
* Change from revised rate.

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Composite Market Averages

	Feb. 16 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100)	156.13	156.13	156.13	155.05	100.65
Index in cents per lb...	4.230	4.230	4.230	4.200	2.727
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$93.00	$93.00	$93.00	$97.77	$57.55
No. 2 Fdry Pig Iron, GT	46.47	46.47	46.22	46.63	24.67
Basic Pig Iron, GT.....	45.97	45.97	45.72	46.22	24.00
Malleable Pig Iron, GT..	47.27	47.27	47.27	47.34	25.29
Steelmaking Scrap, GT..	27.42	27.42	26.83	38.17	19.17

Weighted finished steel index based on average shipments and prices of the following 14 representative products during 5-year base period 1935-39: Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Feb. 16 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh....	3.45	3.45	3.45	3.35–55	2.15
Bars, H.R., Chicago.....	3.45	3.45	3.45	3.35	2.15
Bars, C.F., Pittsburgh	4.10–15	4.10–15	4.10–15	3.95–4.25	2.65
Shapes, Std., Pittsburgh ..	3.40	3.40	3.40	3.25–30	2.10
Shapes, Std., Chicago.....	3.40	3.40	3.40	3.25	2.10
Plates, Pittsburgh	3.50	3.50	3.50	3.40–60	2.20
Plates, Chicago	3.50	3.50	3.50	3.40	2.20
Plates, Coatesville, Pa. ...	3.60	3.60	3.60	3.75	2.20
Plates, Sparrows Point, Md.	3.50	3.50	3.50	3.45	2.20
Plates, Claymont, Del. ...	3.60	3.60	3.60	3.95	2.20
Sheets, H.R., Pittsburgh..	3.35	3.35	3.35	3.25–30	2.20
Sheets, H.R., Chicago.....	3.35	3.35	3.35	3.25	2.20
Sheets, C.R., Pittsburgh...	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Chicago.....	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Detroit	4.30	4.30	4.30	4.20	3.15
Sheets, Galv., Pittsburgh..	4.40	4.40	4.40	4.40	3.65
Strip, H.R., Pittsburgh....	3.25	3.25	3.25	3.25–70	2.10
Strip, H.R., Chicago	3.25	3.25	3.25	3.25–30	2.10
Strip, C.R., Pittsburgh....	4.15	4.15	4.15	4.00–75	2.80
Strip, C.R., Chicago.....	4.30	4.30	4.30	4.00–25	2.90
Strip, C.R., Detroit	4.35–40	4.35–40	4.35–40	4.20–50	2.90
Wire, Basic, Pittsburgh...	4.50	4.50	4.50	4.15–50	2.60
Nails, Wire, Pittsburgh...	5.30	5.30	5.30	5.15–6.30	2.80
Tin plate, box, Pittsburgh.	$7.50	$7.50	$7.50	$6.70	$5.00

SEMIFINISHED

Billets, forging, Pitts. (NT)	$63.00	$63.00	$63.00	$61.00	$40.00
Sheet bar, mill (NT)	57.00–58.00	57.00–58.00	57.00–58.00	67.00	34.00
Wire rods, $\frac{7}{32}$-$\frac{9}{16}$", Pitts. .	3.85	3.85	3.85	3.40–4.15	2.00

PIG IRON, Gross Ton

Bessemer, Pitts.	$47.00	$47.00	$47.00	$47.00	$25.50
Basic, Valley	46.00	46.00	46.00	46.00	24.50
Basic, del. Phila.	49.44	49.44	49.44	50.30	26.34
No. 2 Fdry, Pitts.	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, Chicago.....	46.50	46.50	46.50	46.00–50	25.00
No. 2 Fdry, Valley.....	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, del. Phila. ...	49.94	49.94	49.94	50.80	26.84
No. 2 Fdry, Birm.....	42.38	42.38	39.38-42.38	43.38	21.38
No. 2 Fdry. (Birm.) Del Cin.	49.08	49.08	46.08	49.43	25.06
Malleable, Valley	46.50	46.50	46.50	46.50	25.00
Malleable, Chicago	46.50	46.50	46.50	46.50	25.00
Charcoal, Lyles, Tenn. ...	60.00	60.00	60.00	66.00	33.00
Ferromanganese, Etna, Pa.	175.00	175.00	175.00	163.00	140.33*

* Delivered, Pittsburgh.

SCRAP, Gross Ton

No. 1 Heavy Melt. Pitts. ..	$32.00	$31.25	$30.00	$39.00	$20.00
No. 1 Heavy Melt. E. Pa..	23.50	23.50	23.00	39.50	18.75
No. 1 Heavy Melt. Chicago	27.50	27.50	27.50	36.00	18.75
No. 1 Heavy Melt. Valley..	31.25	31.25	30.25	37.75	20.00
No. 1 Heavy Melt. Cleve..	28.25	28.25	27.25	37.25	19.50
No. 1 Heavy Melt. Buffalo	27.75	27.75	27.75	39.50	19.25
Rails, Rerolling, Chicago..	40.50	39.50	39.50	48.00	22.25
No. 1 Cast, Chicago.....	40.50	40.50	38.50	44.00	20.00

COKE, Net Ton

Beehive, Furn., Connlsvl...	$13.25	$13.25	$13.25	$14.50	$7.00
Beehive, Fdry., Connlsvl. .	15.50	15.50	15.50	17.00	7.75
Oven Fdry., Chicago.....	21.00	21.00	20.00	20.40	13.35

NONFERROUS METALS

Copper, del. Conn.	18.50	18.50	18.50	23.50	12.00
Zinc, E. St. Louis.....	9.75	9.75	9.75	17.50	8.25
Lead, St. Louis	11.80	11.80	11.80	21.30–35	6.35
Tin, New York	74.50	74.50	75.50	103.00	52.00
Aluminum, del.	17.00	17.00	17.00	17.00	15.00
Antimony, Laredo, Tex. ..	27.25	27.25	28.75	38.50	14.50
Nickel, refinery, duty paid.	40.00	40.00	40.00	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$48.00	$48.50	$49.00	$49.50
Newark, del	50.63	51.13	51.63	52.13
Brooklyn, N.Y., del.	....	52.79	53.29	....
Birmingham District				
Birmingham R2	41.88	42.38	....	....
Birmingham S9	41.88	42.38	....	....
Woodward, Ala. W15	41.88	42.38	....	....
Cincinnati, del.	....	49.08	....	....
Buffalo District				
Buffalo H1, R2	46.00	46.50	47.00	....
Tonawanda, N.Y., W12	46.00	46.50	47.00	....
N. Tonawanda, N.Y. T9	....	46.50	47.00	....
Boston, del.	55.26	55.76	56.20	....
Rochester, N.Y., del.	48.63	49.13	49.63	....
Syracuse, N.Y., del.	49.58	50.08	50.58	....
Chicago District				
Chicago I-3	46.00	46.50	46.50	47.00
Gary, Ind. C3	46.00	....	46.50	....
IndianaHarbor, Ind. I-2	46.00	....	46.50	....
So. Chicago, Ill. W14, Y1	46.00	46.50	46.50	....
So. Chicago, Ill. C3	46.00	....	46.50	47.00
Milwaukee, del	47.89	48.39	48.39	48.89
Muskegon, Mich., del.	....	51.98	51.98	....
Cleveland District				
Cleveland A7	46.00	46.50	46.50	47.00
Cleveland R2	46.00	46.50	46.50	....
Akron, del. from Cleve.	48.39	48.89	48.89	49.39
Lorain, O. N3	46.00	....	....	47.00
Duluth I-3	....	....	46.50	....
Erie, Pa. I-3	46.00	46.50	46.50	47.00
Everett, Mass. E1	....	50.50	51.00	....
Fontana, Calif. K1	52.00	52.50	....	....
Geneva, Utah G1	46.00	46.50	....	....
Seattle, Tacoma, Wash., del.	....	54.20	....	....
Portland, Oreg., del.	....	54.20	....	....
LosAngeles, SanFrancisco, del.	53.70	54.20	....	....
GraniteCity, Ill. M10	47.90	48.40	48.90	....
St. Louis, del. (incl. tax)	48.65	49.15	49.65	....
Ironton, Utah C11	46.00	46.50	....	....
Minnequa, Colo. C10	47.00	47.50	47.50	....
Pittsburgh District				
NevilleIsland, Pa. P6	46.00	46.50	46.50	47.00
Pitts, N.&S. sides, Ambridge, Aliquippa, del.	47.19	47.69	47.69	48.19
McKeesRock, del.	46.95	47.45	47.45	47.95
Lawrenceville, Homestead, McKeesport, Monaca, del	47.44	47.94	47.94	48.44
Verona, del.	47.90	48.40	48.40	48.90
Brackenridge, del.	48.13	48.63	48.63	49.13
Bessemer, Pa. C3	46.00	....	46.50	47.00
Clairton, Rankin, So. Duquesne, Pa. C3	46.00	....	....	....
McKeesport, Pa. N3	46.00	....	....	47.00
Sharpsville, Pa. S6	46.00	46.50	46.50	47.00
Steelton, Pa. B2	48.00	48.50	49.00	49.50
Steubenville, O. W10	46.00	....	....	....
Struthers, O. S16	46.00	....	....	....
Swedeland, Pa. A3	48.00	48.50	49.00	49.50
Philadelphia, del.	49.44	49.94	50.44	50.94
Toledo, O. I-3	46.00	46.50	46.50	47.00
Cincinnati, del.	51.01	51.51	....	....
Troy, N.Y., R2	48.00	48.50	49.00	....
Youngstown District				
Hubbard, O. Y1	46.00	46.50	46.50	....
Youngstown C3	46.00	....	....	47.00
Youngstown Y1	46.00	46.50	46.50	47.00
Mansfield, O. del.	50.26	50.76	50.76	51.26

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si to 11.50%)

Jackson, O. G2	$57.00
Jackson, O. J1	*57.50*
Buffalo H1	58.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for 0.045% max. P)

NiagaraFalls, N.Y. P15	$71.50
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	77.00
Keokuk, Iowa, OH & Fdry., 12½ lb. piglets, frt, allowed K2.	82.00
Wenatchee, Wash., OH & Fdry, frt. allowed K2	77.00

CHARCOAL PIG IRON, Gross Ton

(Low phos. semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

LylesTenn. T3	$60.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, Intermediate, A7	$51.00
Steelton, Pa. B2	54.00
Philadelphia delivered	57.00
Troy, N.Y. R2	54.00

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL, Feb. 16, 1950; cents per pound unless otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Detroit R7 .....$50.00
Munhall,Pa. C3 .....50.00

INGOTS, Alloy (NT)
Detroit R7 .....$51.00
Houston,Tex. S5 .....59.00
Midland,Pa. C18 .....51.00
Munhall,Pa. C3 .....51.00
So.Duquesne,Pa. C3 ...51.00

BILLETS, BLOOMS & Slabs Carbon, Rerolling (NT)
Bessemer,Pa. C3 ....$53.00
Clairton,Pa. C3 .....53.00
Conshohocken,Pa. A3 .58.00
Ensley,Ala. T2 .....53.00
Fairfield,Ala. T2 .....53.00
Fontana,Cal. K1 .....72.00
Gary,Ind. C3 .....53.00
Johnstown,Pa. B2 ....53.00
Lackawanna,N.Y. B2 ..53.00
Munhall,Pa. C3 .....53.00
Sharon,Pa. S3 .....57.00
So.Chicago,Ill. C3 ....53.00
So.Duquesne,Pa. C3 ..53.00

Carbon, Forging (NT)
Bessemer,Pa. C3 ....$63.00
Buffalo R2 .....63.00
Canton,O. R2 .....63.00
Clairton,Pa. C3 .....63.00
Cleveland R2 .....63.00
Conshohocken,Pa. A3..65.00
Detroit R7 .....63.00
Ensley,Ala. T2 .....63.00
Fairfield,Ala. T2 .....63.00
Fontana,Calif. K1 ....82.00
Gary,Ind. C3 .....63.00
Geneva,Utah G1 .....63.00
Houston,Tex. S5 .....71.00
Ind.Harbor,Ind. I-2 ...63.00
Johnstown,Pa. B2 ....63.00
Lackawanna,N.Y. B2 ..63.00
LosAngeles B3 .....82.00
Munhall,Pa. C3 .....63.00
Seattle B3 .....82.00
So.Chicago C3,R2,W14.63.00
So.Duquesne,Pa. C3 ..63.00
So.SanFrancisco B3 ..82.00
Warren,O. C17 .....63.00

Alloy (NT)
Bethlehem,Pa. B2 ...$66.00
Buffalo R2 .....66.00
Canton,O. R2, T7 ....66.00
Conshohocken,Pa. A3 ..68.00
Detroit R7 .....66.00
Fontana,Calif. K1 ....82.00
Gary,Ind. C3 .....66.00
Houston,Tex. S5 .....74.00
Ind.Harbor,Ind. Y1 ...66.00
Johnstown,Pa. B2 ....66.00
Lackawanna,N.Y. B2 ..66.00
LosAngeles B3 .....86.00
Massillon,O. R2 .....66.00
Midland,Pa. C18 .....66.00
Munhall,Pa. C3 .....66.00
Sharon,Pa. S3 .....66.00
So.Chicago C3,R2,W14.66.00
So.Duquesne,Pa. C3 ..66.00
Warren,O. C17 .....66.00
Youngstown Y1 .....66.00

SHEET BARS (NT)
Mansfield,O. E6 .....$58.00
Sharon,Pa. S3 .....57.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 .....$76.00
Cleveland R2 .....76.00
Ind.Harbor,Ind. I-2 ...76.00
Massillon,O. R2 .....76.00
So.Chicago,Ill. R2 ....76.00

SKELP
Aliquippa,Pa. J5 .....3.25
Munhall,Pa. C3 .....3.15
Warren,O. R2 .....3.15
Youngstown C3, R2 ...3.15

WIRE RODS
AlabamaCity,Ala. R2 ..3.85
Buffalo W12 .....3.85
Cleveland A7 .....3.85
Donora,Pa. A7 .....3.85
Fairfield,Ala. T2 .....3.85
Houston,Tex. S5 .....4.25
Ind.Harbor,Ind. Y1 ...3.85
Johnstown,Pa. B2 ....3.85
Joliet,Ill. A7 .....3.85
LosAngeles B3 .....4.65
Minnequa,Colo. C10 ...4.10
Monessen,Pa. P7 .....3.85
No.Tonawanda,N.Y. B11.4.10
Pittsburg,Calif. C11 ...4.50
Portsmouth,O. P12 ....3.85
Roebling,N.J. R5 .....3.95
So.Chicago,Ill. R2 ....3.85
SparrowsPoint B2 .....3.95
Sterling,Ill.(1) N15 ....3.85
Struthers,O. Y1 .....3.85
Torrance,Calif. C11 ....4.65

STRUCTURALS
Carbon Steel Stand. Shapes
Aliquippa,Pa. J5 .....3.40
Bessemer,Ala. T2 .....3.40
Bethlehem,Pa. B2 .....3.45
Clairton,Pa. C3 .....3.40
Fairfield,Ala. T2 .....3.40
Fontana,Calif. K1 .....4.00
Gary,Ind. C3 .....3.40
Geneva,Utah G1 .....3.40
Houston,Tex. S5 .....3.80
Ind.Harbor,Ind. I-2 ...3.40
Johnstown,Pa. B2 .....3.45
KansasCity,Mo. S5 ....4.00
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 .....4.00
Minnequa,Colo. C10 ...3.75
Munhall,Pa. C3 .....3.40
Niles,Calif.(22) P1 ....4.02
Phoenixville,Pa. P4 ...3.30
Portland,Oreg. O4 .....3.90
Seattle B3 .....4.05
So.Chicago,Ill. C3, W14.3.40
So.SanFrancisco B3 ...3.95
Torrance,Calif. C11 ....4.00
Weirton,W.Va. W6 ....3.40

Alloy Stand. Shapes
Clairton,Pa. C3 .....4.05
Fontana,Calif. K1 .....5.25
Munhall,Pa. C3 .....4.05
So.Chicago,Ill. C3 .....4.05

H.-S. Low-Alloy Stand. Shapes
Aliquippa,Pa. J5 .....5.15
Bessemer,Ala. T2 .....5.15
Bethlehem,Pa.(14) B2 ..5.20
Clairton,Pa. C3 .....5.15
Fairfield,Ala. T2 .....5.15
Fontana,Calif. K1 .....5.75
Gary,Ind. C3 .....5.15
Ind.Harbor,Ind. I-2, Y1.5.15
Johnstown,Pa. B2 .....5.20
Lackawanna,N.Y.(14)B2 5.20
Munhall,Pa. C3 .....5.15
So.Chicago,Ill. C3 .....5.15
Struthers,O. Y1 .....5.15

Wide Flange
Bethlehem,Pa. B2 .....3.45
Lackawanna,N.Y. B2 ..3.45
Munhall,Pa. C3 .....3.40
So.Chicago,Ill. C3 .....3.40

H-S., L-A. Wide Flange
Munhall,Pa. C3 .....5.10
So.Chicago,Ill., C3 ....5.10

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ...4.20
Lackawanna,N.Y. B2 ..4.20
Munhall,Pa. C3 .....4.20
So.Chicago,Ill. C3 .....4.20
Weirton,W.Va. W6 ....4.20

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.50
Aliquippa,Pa. J5 .....3.50
Ashland,Ky.(15) A10 ..3.50
Bessemer,Ala. T2 .....3.50
Clairton,Pa. C3 .....3.50
Claymont,Del. W16 ....3.60
Cleveland J5, R2 .....3.50
Coatesville,Pa. L7 .....3.60
Conshohocken,Pa. A3 ..3.60
Ecorse,Mich. G5 .....3.75
Fairfield,Ala. T2 .....3.50
Fontana,Calif. K1 .....4.10
Gary,Ind. C3 .....3.50
Geneva,Utah G1 .....3.50
Harrisburg,Pa. C5 .....3.50
Houston,Tex. S5 .....3.90
Ind.Harbor,Ind. I-2, Y1.3.50
Johnstown,Pa. B2 .....3.50
Lackawanna,N.Y. B2 ..3.50
Minnequa,Colo. C10 ...4.30
Munhall,Pa. C3 .....3.50
Pittsburgh J5 .....3.50
Seattle B3 .....4.40
Sharon,Pa. S3 .....3.50
So.Chicago,Ill. C3, W14.3.50
SparrowsPoint,Md. B2 ..3.50
Steubenville,O. W10 ...3.50
Warren,O. R2 .....3.50
Weirton,W.Va. W6 ....3.50
Youngstown C3, Y1....3.50

PLATES (Universal Mill)
Fontana,Calif. K1 ....4.40

PLATES, Carbon, A.R.
Fontana,Calif. K1 .....5.25

PLATES, Open-Hearth Alloy
Coatesville,Pa. L7 .....4.50
Conshohocken,Pa. A3 ..4.40
Fontana,Calif. K1 .....5.40
Gary,Ind. C3 .....4.40
Johnstown,Pa. B2 .....4.40
Munhall,Pa. C3 .....4.40
Sharon,Pa. S3 .....4.40
So.Chicago,Ill. C3 .....4.40
SparrowsPoint,Md. B2 ..4.40

PLATES, Wrought Iron
Economy,Pa. B14 .....7.85

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.35
Bessemer,Ala. T2 .....5.35
Clairton,Pa. C3 .....5.35
Cleveland J5, R2 .....5.35
Conshohocken,Pa. A3 ..5.35
Ecorse,Mich. G5 .....5.60
Fairfield,Ala. T2 .....5.35
Fontana,Calif. K1 .....5.95
Gary,Ind. C3 .....5.35
Geneva,Utah G1 .....5.35
Houston,Tex. S5 .....5.60
Ind.Harbor,Ind. I-2, Y1.5.35
Johnstown,Pa. B2 .....5.35
Munhall,Pa. C3 .....5.35
Pittsburgh J5 .....5.35
Sharon,Pa. S3 .....5.35
So.Chicago,Ill. C3 .....5.35
SparrowsPoint,Md. B2 ..5.35
Warren,O. R2 .....5.35
Youngstown Y1 .....5.35

FLOOR PLATES
Cleveland J5 .....4.55
Conshohocken,Pa. A3 ..4.55
Harrisburg,Pa. C5 .....4.55
Ind. Harbor, Ind. I-2 ..4.55
Munhall,Pa. C3 .....4.55
So.Chicago,Ill. C3 .....4.55

PLATES, Ingot Iron
Ashland,c.l.(15) A10 ...3.75
Ashland,lcl(15) A10 ...4.25
Cleveland,cl R2 .....4.10
Warren,O.,cl R2 .....4.10

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.45
Aliquippa,Pa. J5 .....3.45
Alton,Ill.(1) L1 .....3.45
Ashland,Ky.(17) A10 ..3.45
Atlanta,Ga. A11 .....3.60
Bessemer,Ala. T2 .....3.45
Buffalo R2 .....3.45
Canton,O. R2 .....3.45
Clairton,Pa. C3 .....3.45
Cleveland R2 .....3.45
Ecorse,Mich. G5 .....3.65
Emeryville,Calif. J7 ...4.20
Fairfield,Ala. T2 .....3.45
Fontana,Calif. K1 .....4.10
Gary,Ind. C3 .....3.45
Houston,Tex. S5 .....3.85
Ind.Harbor,Ind. I-2, Y1.3.45
Johnstown,Pa. B2 .....3.45
KansasCity,Mo. S5 ....4.05
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 .....4.15
Marion,O. P11 .....3.35
Midland,Pa. C18 .....3.45
Milton,Pa. B6 .....3.45
Minnequa,Colo. C10 ...3.85
Niles,Calif. P1 .....4.17
N.Tonawanda,N.Y. B11 .3.45
Pittsburg,Calif. C11 ...4.15
Pittsburgh J5 .....3.45
Portland,Oreg. O4 .....4.20
Seattle B3, N14 .....4.20
So.Chicago C3, R2, W14.3.45
So.Duquesne,Pa. C3 ...3.45
S.SanFran.,Cal. B3 ....4.20
Struthers,O. Y1 .....3.45
Torrance,Calif. C11 ...4.15
Weirton,W.Va. W6 ....3.45
Youngstown C3, R2 ....3.45

BAR SIZE ANGLES; S. SHAPES
Aliquippa,Pa. J5 .....3.45
Atlanta A11 .....3.60
Johnstown,Pa. B2 .....3.45
Lackawanna,N.Y. B2 ..3.45
Niles,Calif. P1 .....4.17
Pittsburgh(23) J5 .....3.45
Portland,Oreg. O4 .....4.20
SanFrancisco S7 .....4.00
Weirton,W.Va. W6 ....3.45

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....3.65

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....3.95
Buffalo R2 .....3.95
Canton,O. R2, T7.....3.95
Clairton,Pa. C3 .....3.95
Ecorse,Mich. G5 .....4.25
Fontana,Calif. K1 .....4.95
Gary,Ind. C3 .....3.95
Houston,Tex. S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 .....5.00
Massillon,O. R2 .....3.95
Midland,Pa. C18 .....3.95
So.Chicago C3, R2, W14.3.95
So.Duquesne,Pa. C3 ...3.95
Struthers,O. Y1 .....3.95
Warren,O. C17 .....3.95
Youngstown C3 .....3.95

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. C3 .....4.20
Fontana,Calif. K1 .....4.95
Gary,Ind. C3 .....4.20
Youngstown C3 .....4.20

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.20
Bessemer,Ala. T2 .....5.20
Bethlehem,Pa. B2 .....5.20
Clairton,Pa. C3 .....5.20
Cleveland R2 .....5.20
Ecorse,Mich. G5 .....5.40
Fairfield,Ala. T2 .....5.20
Fontana,Calif. K1 .....6.25
Gary,Ind. C3 .....5.20
Ind.Harbor,Ind. I-2, Y1.5.20
Johnstown,Pa. B2 .....5.20
Lackawanna,N.Y. B2 ..5.20
Pittsburgh J5 .....5.20
So.Duquesne,Pa. C3 ...5.20
Struthers,O. Y1 .....5.20
Youngstown C3 .....5.20

BARS, Cold-Finished Carbon
Aliquippa,Pa. K5 .....4.15
Ambridge,Pa. W18 ....4.15
BeaverFalls,Pa. M12,R2.4.15
Buffalo B5 .....4.15
Camden,N.J. P13 .....4.63
Carnegie,Pa. C12 .....4.15
Chicago W18 .....4.15
Cleveland A7, C20 .....4.15
Detroit P17 .....4.30
Donora,Pa. A7 .....4.15
Ecorse,Mich. G5 .....4.35
Elyria,O. W8 .....4.15
FranklinPark,Ill. N5 ..4.15
Gary,Ind. R2 .....4.15
Hammond,Ind. L2, M13.4.15
Hartford,Conn. R2 ....4.55
Harvey,Ill. B5 .....4.15
LosAngeles R2 .....5.55
Mansfield,Mass. B5 ....4.55
Massillon,O. R2, R8 ...4.15
Midland,Pa. C18 .....4.15
Monaca,Pa. S17 .....4.15
Newark,N.J. W18 .....4.55
Plymouth,Mich. P5 ....4.40
Pittsburgh J5 .....4.10
Putnam,Conn. W18 ....4.55
Readville,Mass. C14 ....4.55
St.Louis,Mo. M5 .....4.55
So.Chicago,Ill. W14 ....4.15
SpringCity,Pa.(5) K3 ..4.55
Struthers,O. Y1 .....4.15
Waukegan,Ill. A7 .....4.15
Youngstown F3, Y1 ....4.15

BARS, Cold-Finished Alloy
Aliquippa,Pa. K5 .....4.90
Ambridge,Pa. W18 ....4.90
BeaverFalls,Pa. M12 ..4.90
Bethlehem,Pa. B2 .....4.90
Buffalo B5 .....4.90
Canton,O. R2, T7 .....4.90
Carnegie,Pa. C12 .....4.90
Chicago W18 .....4.90
Cleveland A7, C20.....4.90
Detroit P17 .....5.05
Donora,Pa. A7 .....4.90
Elyria,O. W8 .....4.90
Gary,Ind. R2 .....4.90
Hammond,Ind. L2, M13.4.90
Hartford,Conn. R2 .....5.20
Harvey,Ill. B5 .....4.90
Lackawanna,N.Y. B2 ..4.90
Mansfield,Mass. B5 ...5.20
Massillon,O. R2, R8 ...4.90
Midland,Pa. C18 .....4.90
Monaca,Pa. S17 .....4.90
Newark,N.J. W18 .....5.20
Plymouth,Mich. P5 ....5.10
So.Chicago,Ill. R2, W14.4.90
Struthers,O. Y1 .....4.90
Waukegan,Ill. A7 .....4.90
Warren,O. C17 .....4.90
Worcester,Mass. A7 ....5.20
Youngstown F3, Y1....4.90

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..3.45
Alton,Ill.(6) L1 .....3.45
Atlanta,Ga. A11 .....3.60
Buffalo R2 .....3.45
Cleveland R2 .....3.45
Emeryville,Calif. J7 ...4.20
Fairfield,Ala. T2 .....3.45
Fontana,Calif. K1 .....4.10
Gary,Ind. C3 .....3.45
Houston,Tex. S5 .....3.85
Ind.Harbor,Ind. I-2, Y1.3.45
Johnstown,Pa. B2 .....3.45
KansasCity,Mo. S5 ....4.05
LosAngeles B3 .....4.15
Minnequa,Colo. C10 ...4.25
Niles,Calif. P1 .....4.17
Pittsburg,Calif. C11 ...4.15
Pittsburgh J5 .....3.45
Portland,Oreg. O4 .....4.20
SandSprings,Okla. S5 ..4.35
Seattle,Wash. B3, N14..4.20
So.Chicago,Ill. R2 .....3.45
So.Duquesne,Pa. C3 ....3.45
So.SanFrancisco B3 ....4.20
SparrowsPoint,Md. B2 ..3.45
Struthers,O. Y1 .....3.45
Torrance,Calif. C11 ....4.15
Youngstown C3, R2....3.45

BARS, Reinforcing (Fabricated; to Consumers)
Huntington,W.Va. W7 ..4.50
Johnstown, ¼-1" B2 ..4.35
LosAngeles B3 .....5.00
Marion,O. P11 .....4.25
Seattle B3, N14 .....5.10
So.SanFrancisco B3 ...5.00
SparrowsPt., ¼-1" B2 ..4.35
Williamsport,Pa. S19 ..4.35

RAIL STEEL BARS
ChicagoHts.,Ill.(3) I-2..3.30
ChicagoHts.,Ill.(4) I-2..3.45
FortWorth,Tex.(26) T4..4.33
Hntngtn,W.Va.(3) W7..3.45
Moline,Ill.(3) R2 .....3.35
Williamsport(2,3) S19 ..3.45

BARS, Wrought Iron
Economy,Pa.(S.R.) B14.9.50
Economy,Pa.(D.R.)B14 11.00
Economy(Staybolt) B14.11.30
McK.Rks.(S.R.) L5 ....8.60
McK.Rks.(D.R.) L5 ..11.25
McK.Rks.(Staybolt) L5.12.75

BARS, Hot-Rolled Ingot Iron
Ashland,Ky. A10 .....3.70

SHEETS, Hot-Rolled Steel (18 gage and heavier)
AlabamaCity,Ala. R2 ..3.35
Ashland,Ky.(8) A10 ...3.35
Butler,Pa. A10 .....3.35
Cleveland J5, R2 .....3.35
Conshohocken,Pa. A3 ..3.45
Ecorse,Mich.(8) G5 ....3.55
Fairfield,Ala. T2 .....3.35
Fontana,Calif. K1 .....4.25
Gary,Ind. C3 .....3.35
Ind.Harbor,Ind. I-2, Y1.3.35
Irvin,Pa. C3 .....3.35
Lackawanna,N.Y. B2 ..3.35
Munhall,Pa. C3 .....3.35
Niles,O. N12 .....3.50
Niles,O. M4 .....3.75
Pittsburg,Calif. C11 ...4.05
Pittsburgh J5 .....3.35
Sharon,Pa. S3 .....3.35
So.Chicago,Ill. W14 ....3.35
SparrowsPoint,Md. B2 ..3.35
Steubenville,O. W10 ...3.35
Torrance,Calif. C11 ....4.05
Warren,O. R2 .....3.35
Weirton,W.Va. W6 ....3.35
Youngstown C3, Y1 ....3.35

SHEETS, Hot-Rolled Carbon Steel (19 gage and lighter)
AlabamaCity,Ala. R2 ..4.50
Dover,O. R1 .....4.65
Ind.Harbor,Ind. I-2 ....4.40
Mansfield,O. E6 .....4.15
Niles,O. N12 .....4.10
Niles,O. M4 .....4.65
Torrance,Calif. C11 ....5.15

SHEETS, H-R (14 ga., heavier) High-Strength Low-Alloy
Cleveland J5, R2 .....5.05
Conshohocken,Pa. A3 ..5.05
Ecorse,Mich. G5 .....5.25
Fairfield,Ala. T2 .....5.05
Fontana,Calif. K1 .....6.74
Gary,Ind. C3 .....5.05
Ind.Harbor,Ind. I-2, Y1.5.05
Irvin,Pa. C3 .....5.05
Lackawanna(35) B2 ...5.05
Pittsburgh J5 .....5.05
Sharon,Pa. S3 .....5.05
So.Chicago,Ill. C3 .....5.05
SparrowsPoint(36) B2 ..5.05
Warren,O. R2 .....5.05
Weirton,W.Va. W6 ....5.05
Youngstown C3, Y1 ....5.05

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2.....6.20
Ecorse,Mich. G5 .....6.40
Fontana,Calif. K1 .....7.10
Gary,Ind. C3 .....6.20
Ind.Harbor,Ind. I-2, Y1.6.20
Irvin,Pa. C3 .....6.20
Lackawanna(37) B2 ...6.20
Pittsburgh J5 .....6.20
Sharon,Pa. S3 .....6.20
SparrowsPoint(38) B2 ..6.20
Warren,O. R2 .....6.20
Weirton,W.Va. W6 ....6.20
Youngstown Y1 .....6.20

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.10
Cleveland J5, R2	4.10
Erorse,Mich. G5	4.30
Fairfield,Ala. T2	4.10
Follansbee,W.Va. F4	4.10
Fontana,Calif. K1	5.00
Gary,Ind. C3	4.10
GraniteCity,Ill. G4	4.30
Ind.Harbor,Ind. I-2, Y1	4.10
Irvin,Pa. C3	4.10
Lackawanna,N.Y. B2	4.10
Middletown,O. A10	4.10
Pittsburg,Calif. C11	5.05
Pittsburgh J5	4.10
SparrowsPoint,Md. B2	4.10
Steubenville,O. W10	4.10
Warren,O. R2	4.10
Weirton,W.Va. W6	4.10
Youngstown Y1	4.10

SHEETS, Gal'zd No. 10 Steel

AlabamaCity,Ala. R2	4.40
Ashland,Ky.(8) A10	4.40
Canton,O. R2	4.40
Delphos,O. N16	5.15
Dover,O. R1	4.75
Fairfield,Ala. T2	4.40
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Kokomo,Ind. C16	4.50
MartinsFerry,O. W10	4.40
Niles,O. N12	4.65
Pittsburg,Calif. C11	5.15
SparrowsPoint,Md. B2	4.40
Steubenville,O. W10	4.40
Torrance,Calif. C11	5.15
Weirton,W.Va. W6	4.40

SHEETS, Galvanized No. 10, High-Strength Low Alloy

Irvin,Pa. C3	6.75
SparrowsPoint(39) B2	6.75

SHEETS, Gavannealed Steel

Canton,O. R2	4.95
Irvin,Pa. C3	4.95
Kokomo,Ind. C16	5.05
Niles,O. N12	5.20

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	4.65
Middletown,O. A10	4.65

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.25
Niles,O. R2 (28)	5.25
Weirton,W.Va. W6	5.10

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.05

SHEETS,Well Casing

Torrance,Calif. C11	4.85
Youngstown C3	3.85

SHEETS, Drum Body

Pittsburg,Calif. C11	3.95
Torrance,Calif. C11	3.95

SHEETS, Aluminized

Butler,Pa. A10	7.75

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10	4.80
Gary,Ind. C3	4.80
Mansfield,O. E6	4.80
Middletown,O. A10	4.80
Niles,O. N12	4.80
Weirton,W.Va. W6	4.80

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.20

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. C3	$17.50
Yorkville, O. W10	17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$6.60
Gary,Ind. C3	6.50
Ind.Harbor I-2	6.50
Irvin,Pa. C3	6.50
Yorkville,O. W10	6.50

SHEETS, Lt. Coated Ternes, 6 lb

Yorkville,O. W10	$7.20

SHEETS, Mfg. Ternes, 8 lb

Gary,Ind. C3	$8.10
Yorkville,O. W-10	8.10

SHEETS, Coated Ternes, 12 lb

Yorkville,O. W10	8.95

SHEETS, Culvert. No. 16

	Cu Alloy	Cu Fe
Ashland A10	5.20	...
Canton,O. R2	5.25	5.70
Fairfield,Ala. T2	5.20	5.45
Gary C3	5.20	5.45
GraniteCity G4	5.40	5.70
IndianaHarbor I-2	5.20	5.45
Irvin C3	5.20	5.45
Kokomo C16	5.40	...
MartinsFy,O. W10	5.20	5.45
Pittsburg,Cal. C11	5.95	...
SparrowsPt. B2	5.20	...
Torrance,Cal. C11	5.95	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10	5.45

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	3.60
Cleveland R2	3.95
Ind.Harbor,Ind. I-2	3.60
Warren,O. R2	3.95

SHEETS, Cold-Rolled Ingot Iron

Cleveland R-2	4.70
Middletown,O. A10	4.60
Warren,O. R2	4.70

SHEETS, Galvanized Ingot Iron No. 10 Flat

Ashland,Ky.(8) A10	4.65
Canton,O. R2	5.15
Ind.Harbor,Ind. I-2	4.80

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	4.90
Middletown,O. A10	4.90

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$6.35	$6.60	$6.85
Fairfield,Ala. T2	6.45	6.70	6.95
Gary,Ind. C3	6.35	6.60	6.85
GraniteCity,Ill. G4	6.55	6.80	7.05
Ind.Harbor,Ind. I-2, Y1	6.35	6.60	6.85
Irvin,Pa. C3	6.35	6.60	6.85
Niles,O. R2	6.35	6.60	6.85
Pittsburg,Calif. C11	7.10	7.35	7.60
SparrowsPoint,Md. B2	6.45	6.70	6.95
Weirton,W.Va. W6	6.35	6.60	6.85
Yorkville,O. W10	6.35	6.60	6.85

SHEETS, SILICON, H.R. or C.R. (22 Ga.) Coils (Cut Lengths ½c lower)

	Field	Armature	Electric	Motor	Dynamo
BeeachBottom,W.Va. W10	...	6.95	7.45	8.45	9.25
Brackenridge,Pa. A4	...	...	7.45	8.45	9.25
Follansbee F4 (cut length)	...	...	6.95	7.95	8.75
GraniteCity,Ill. G4	...	...	7.65	8.65	...
Ind.Harbor,Ind. I-2	6.40	6.70	(34)	...	...
Vandergrift,Pa. C3	...	6.95	7.45	8.45	9.25
Warren,O. R2	6.40	6.70	7.20	8.45	9.25
Zanesville,O. A10	...	6.70	7.20	8.45	9.25

SHEETS, SILICON (24 Ga. Base)

Mansfield,O. E6	5.90	6.20	6.70	7.95	8.75
Niles,O. M4	5.65	5.95	6.45	...	...
Niles,O. N12	...	6.45	6.95	...	...

SHEETS, SILICON (22 Gage Base) Coils (Cut Lengths ½c lower)

Transformer Grade	72	65	58	52
BeechBottom,W.Va. W10	9.80	10.35	11.05	11.85
Brackenridge,Pa. A4	9.80	10.35	11.05	....
Follansbee F4 (cut length)	9.30	9.85	10.55	11.35
Vandergrift,Pa. C3	9.80	10.35	11.05	11.85
Warren,O. R2	9.80	....	....	....
Zanesville,O. A10	9.80	10.35	11.05	11.85

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80
Vandergrift,Pa. C3	12.35	13.60	14.85

TIN PLATE, American Coke (Base Box)

	1.25 lb	1.50 lb
Aliquippa J5	$7.30	$7.50
Fairfield,Ala. T2	7.40	7.60
Gary C3	7.30	7.50
Gran.City,Ill. G4	7.50	7.70
Ind.Harb. I-1, Y1	7.30	7.50
Irvin,Pa. C3	7.30	7.50
Pitts.Cal. C11	8.05	8.25
Sp.Pt.,Md. B2	7.40	7.60
Warren R2	7.30	7.50
Weirton W6	7.30	7.50
Yorkville,O. W10	7.30	7.50

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$5.60
Fairfield,Ala. T2	5.70
Gary,Ind. C3	5.60
GraniteCity,Ill. G4	5.80
Ind.Harbor,Ind. I-2, Y1	5.60
Irvin,Pa. C3	5.60
Niles,O. R2	5.60
Pittsburg,Calif. C11	6.35
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.60
Weirton,W.Va. W6	5.60
Yorkville,O. W10	5.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Aliquippa,Pa. J5	5.30
Follansbee,W.Va. F4	5.30
Gary,Ind. C3	5.30
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. C3	5.30
Niles,O. R2	5.30
SparrowsPoint,Md. B2	5.40
Warren,O. R2	5.30
Yorkville,O. W10	5.30

SHEETS, Enam'lg. Iron

Ashland,Ky.(8) A10	4.40
Cleveland R2	4.40
Ecorse,Mich. G5	4.70
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Middletown,O. A10	4.40
Niles,O. M4	4.90
Youngstown Y1	4.40

STRIP, Hot-Rolled, High-Strength Low-Alloy

Bessemer,Ala. T2	4.95
Conshohocken,Pa. A3	4.95
Ecorse,Mich. G5	5.15
Fairfield,Ala. T2	4.95
Fontana,Cal. K1	6.64
Gary,Ind. C3	4.95
Ind.Harb.,Ind. I-2, Y1	4.95
Lackawanna,N.Y. B2	4.95
Sharon,Pa. S3	4.95
SparrowsPoint,Md. B2	4.95
Warren,O. R2	4.95
Weirton,W.Va. W6	4.95
Youngstown C3, Y1	4.95

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.10
Carnegie,Pa. S18	5.10
Fontana,Calif. K1	6.30
Gary,Ind. C3	5.10
Houston,Tex. S5	5.50
KansasCity,Mo. S5	5.70
NewBritn,Conn.(10) S15	5.10
Sharon,Pa. S3	5.10
Youngstown C3	5.10

STRIP,Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.50
Warren,O. R2	3.85

STRIP, Hot-Rolled Carbon

Alton,Ill.(1) L1	3.25
Ashland,Ky.(8) A10	3.25
Atlanta A11	3.40
Bessemer,Ala. T2	3.25
Bridgeprt,Conn.(10) S15	3.25
Butler,Pa. A10	3.25
Carnegie,Pa. S18	3.25
Conshohocken,Pa. A3	3.35
Detroit M1	3.55
Ecorse,Mich. G5	3.45
Fairfield,Ala. T2	3.25
Fontana,Calif. K1	4.40
Gary,Ind. C3	3.25
Houston,Tex. S5	3.65
Ind.Harbor,Ind. I-2, Y1	3.25
KansasCity,Mo.(9) S5	3.85
Lackawanna,N.Y. B2	3.25
LosAngeles B3	4.00
Milton,Pa. B6	3.25
Minnequa,Colo. C10	4.30
NewBritain(10) S15	3.25
N.Tonawanda,N.Y. B11	3.25
Pittsburg,Calif. C11	4.00
Riverdale,Ill. A1	3.25
SanFrancisco S7	3.90
Seattle B3, N14	4.25
Sharon,Pa. S3	3.25
So.Chicago,Ill. W14	3.25
So.SanFrancisco B3	4.00
SparrowsPoint,Md. B2	3.25
Torrance,Calif. C11	4.00
Warren,O. R2	3.25
Weirton,W.Va. W6	3.25
WestLeechburg,Pa. A4	3.25
Youngstown C3, Y1	3.25

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	9.50
Carnegie,Pa. S18	9.50
Cleveland A7	9.50
Dover,O. G6	9.50
Harrison,N.J. C18	9.80
NewBritn,Conn.(10) S15	9.50
Pawtucket,R.I.(11) N8	9.50
Pawtucket,R.I.(12) N8	9.80
Sharon,Pa. S3	9.50
Worcester,Mass. A7	9.80
Youngstown C8	9.50

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	4.75

STRIP, Cold-Finished, Spring Steel (Annealed)

	0.25-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Bridgeport,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
Bristol,Conn. W1	...	....	6.40	8.35	....
Carnegie,Pa. S18	...	5.95	6.55	8.50	10.80
Cleveland A7	4.15	5.95	6.55	8.50	10.80
Dover,O. G6	4.15	5.95	6.55	8.50	10.80
FranklinPark,Ill. T6	4.40	6.10	6.70	8.65	....
Harrison,N.J. C18	....	....	6.85	8.80	11.10
Mattapan,Mass. T6	4.65	6.25	6.85	8.80	11.10
NewBritn.,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
NewCastle,Pa. B4	4.15	5.95	6.55	8.50	....
NewCastle,Pa. E5	4.15	5.95	6.55	8.50	10.80
NewYork W3	....	6.30	6.90	8.85	11.15
Pawtucket,R. I. N8: Cleve.orPitts.Base (29)	4.55	5.50	6.10	8.05	10.35
Worcester,Base (29)	4.50	5.80	6.40	8.35	10.65
Sharon,Pa. S3	4.15	5.95	6.55	8.50	10.80
Trenton,N.J. R5	....	6.25	6.85	8.80	11.10
Wallingford,Conn. W2	4.65	6.25	6.85	8.80	11.10
Weirton,W.Va. W6	4.15	5.95	6.55	8.50	10.80
Worcester,Mass. A7	4.45	6.25	6.85	8.80	11.10
Worcester,Mass. T6	4.65	6.25	6.85	8.80	11.10
Youngstown C8	4.50	5.50	6.10	8.05	10.35
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	9.35	11.30	13.90

STRIP, Cold-Rolled Carbon

Berea,O. C7	6.10
Bridgeprt,Conn.(10) S15	4.15
Butler,Pa. A10	4.15
Cleveland A7, J5	4.15
Dearborn,Mich. D3	4.40
Detroit, D2	4.40
Detroit M1	4.35
Dover,O. G6	4.15
Ecorse,Mich. G5	4.35
Follansbee,W.Va. F4	4.15
Fontana,Calif. K1	5.40
FranklinPark,Ill. T6	4.30
Ind.Harbor,Ind. I-2	4.30
Lackawanna,N.Y. B2	4.15
LosAngeles C1	5.50
Mattapan,Mass.(21) T6	4.65
Middletown,O. A10	4.15
NewBritain(10) S15	4.15
NewCastle,Pa. B4, E5	4.15
NewHaven,Conn. A7, D2	4.65
NewYork W3	5.00
Pawtucket,R.I.(11) N8	4.70
Pawtucket,R.I.(21) N8	4.65
Riverdale,Ill. A1	4.30
Sharon,Pa.(30) S3	4.15
SparrowsPoint,Md. B2	4.15
Trenton,N.J. (13) R5	4.65
Wallingford,Conn. W2	4.65
Warren,O.(25) T5	4.15
Warren,O. R2	4.15
Weirton,W.Va. W6	4.15
Youngstown C8, Y1	4.15

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5	6.20
Dover,O. G6	6.20
Ecorse,Mich. G5	6.40
Fontana,Calif. K1	6.95
Lackawanna,N.Y., B2	6.40
Sharon,Pa. S3	6.20
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.20
Weirton,W.Va. W6	6.20
Youngstown Y1	6.20

STRIP, Electro Galvanized

Weirton,W.Va. W6	4.15
Youngstown C8	4.15

Key to Producing Companies

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel&Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Tube
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B14 A. M. Byers Co.

C1 Calif. Cold-Rolled Steel
C3 Carnegie-Illinois Steel
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Clev. Cld.Roll.MillsCo.
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia Steel Co.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
E4 Electro Metallurgical Co.
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electric Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Co.

F2 Firth Sterling Steel
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F6 Fretz-Moon Tube Co.

G1 Geneva Steel Co.
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H4 Heppenstall Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K5 Kidd Drawn Steel Co.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Electric Steel
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

UNIVERSITY OF MICHIGAN LIBRARIES

TIGHT COOPERAGE HOOP

Atlanta A11 .....3.60
Riverdale,Ill. A1 .....3.60
Sharon,Pa. S3 .....3.60
Youngstown C3 .....3.60

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5 .....5.90
Alton,Ill.(1) L1 .....5.90
Bartonville,Ill.(1) K4 ..5.90
Buffalo W12 .....5.90
Cleveland A7 .....5.55
Donora,Pa. A7 .....5.55
Duluth A7 .....5.55
Fostoria,O. S1 .....5.90
Johnstown,Pa. B2 .....5.90
LosAngeles B3 .....6.85
Milbury,Mass(12) N6 ..6.20
Monessen,Pa. P7 .....5.90
Palmer,Mass. W12 ....6.20
Pittsburg,Calif. C11 ...6.85
Portsmouth,O. P12 ....5.90
Roebling,N.J. R5 .....6.20
So.Chicago,Ill. R2 ....5.90
SparrowsPoint,Md. B2 .6.00
Struthers,O. Y1 .....5.90
Trenton,N.J. A7 .....5.85
Waukegan,Ill. A7 .....5.55
Worcester,Mass. A7 ....5.85
Worcester J4, T6, W12..6.20

WIRE, Cold-Rolled Flat

Buffalo W12 .....5.35
Cleveland A7 .....5.35
Dover,O. G6 .....5.15
Fostoria,O. S1 .....5.50
Kokomo,Ind. C16 .....5.35
FranklinPark,Ill. T6 ..5.70
Massillon,O. R8 .....5.35
Monessen,Pa. P7 .....5.35
Pawtucket,R.I.(11) N8 .5.70
Pawtucket,R.I.(12) N8 .5.65
Trenton N.J. R5 .....5.65
Worcester A7, T6, W12.5.65

WIRE, Fine and Weaving (8-in. Coils)

Bartonville,Ill.(1) K4 ..8.45
Buffalo W12 .....8.45
Chicago W13 .....8.45
Cleveland A7 .....8.05
Crawfordsville,Ind M8 ..8.60
Fostoria,O. S1 .....8.45
Johnstown,Pa. B2 .....7.70
Kokomo,Ind. C16 .....8.45
Palmer,Mass. W12 ....8.75
Portsmouth,O. P12 ....8.45
Roebling,N.J. R5 .....8.75
Waukegan,Ill. A7 .....8.05
Worcester,Mass. T6 ....8.75
Worcester,Mass. A7 ...8.35

WIRE, Manufacturers Bright, Low-Carbon

AlabamaCity,Ala. R2 ..4.50
Aliquippa,Pa. J5 .....4.50
Atlanta A11 .....4.60
Alton,Ill.(1) L1 .....4.50
Bartonville,Ill.(1) K4 ..4.50
Buffalo W12 .....4.50
Chicago W13 .....4.50
Cleveland C20 .....4.15
Cleveland A7 .....4.50
Crawfordsville,Ind. M8 .4.65
Donora,Pa. A7 .....4.50
Duluth A7 .....4.50
Fairfield,Ala. T2 .....4.50
Fostoria,O.(24) S1 ....4.85
Houston S5 .....4.90
Johnstown,Pa. B2 ....4.50
Joliet,Ill. A7 .....4.50
KansasCity,Mo. S5 ....5.10
Kokomo,Ind. C16 .....4.60
LosAngeles B3 .....5.45
Minnequa,Colo. C10 ...4.75
Monessen,Pa. P7 .....4.50
Newark,6-8ga. I-1 ....5.15
No.Tonawanda B11 ....4.90
Palmer,Mass. W12 ....4.80
Pittsburg,Calif. C11 ...5.45
Portsmouth,O. P12 ....4.50
Rankin,Pa. A7 .....4.50
So.Chicago,Ill. R2 ....4.50
So.SanFrancisco C10 ...5.45
SparrowsPoint,Md. B2 ..4.60
Sterling,Ill.(1) N15 ....4.50
Struthers,O. Y1 .....4.50
Torrance,Calif. C11 ...5.45
Waukegan,Ill. A7 .....4.50
Worcester,Mass. T6 ....4.80
Worcester,Mass. A7 ....4.80

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....5.55
Alton,Ill.(1) L1 .....5.55
Buffalo W12 .....5.55
Cleveland A7 .....5.55
Donora,Pa. A7 .....5.55
Duluth A7 .....5.55
Johnstown,Pa. B2 .....5.55
LosAngeles B3 .....6.50
Monessen P7 .....5.55
NewHaven,Conn. A7 ...5.85
Palmer,Mass. W12 .....5.85
Pittsburg,Calif. C11 ....6.50
Portsmouth,O. P12 ....5.55
Roebling,N.J. R5 .....5.85
So.Chicago,Ill. R2 ....5.55
SparrowsPoint,Md. B2 ..5.65
Struthers,O. Y1 .....5.55
Torrance,Calif. C11 ....6.50
Trenton,N.J. A7 .....5.85
Waukegan,Ill. A7 .....5.55
Worcester,Mass. A7 ....5.85

WIRE, Merchant Quality (6 to 8 gage)

	An'ld	Galv.
Ala.City R2	5.35	5.60
Aliquippa J5	5.35	5.60
Atlanta A11	5.25	5.70
Bartnville(19) K4	5.35	5.60
Buffalo(31) W12.	4.50	...
Cleveland A7 ...	5.35	5.60
Crafrdvil. M8 ..	5.50	5.75
Donora A7	5.35	5.60
Duluth A7	5.35	5.60
Fairfield T2	5.35	5.60
Houston,Tex. S5.	5.75	6.00
Johnstown B2 ..	5.35	5.60
Joliet,Ill. A7	5.35	5.60
KansasCy,Mo. S5.	5.95	6.20
Kokomo C16 ...	5.45	5.70
LosAngeles B3 ..	6.30	...
Minnequa C10 ..	5.60	5.85
Monessen P7 ...	5.35	5.60
Palmer(31) W12.	4.80	...
Pitts.,Cal. C11 ..	6.10	6.55
Prtsmth.(18) P12	5.35	5.60
Rankin A7	5.35	5.60
So.Chicago R2 ..	5.35	5.60
So.S.Fran. C10 ..	6.30	6.55
SparrowsPt. B2 .	5.45	5.70
Sterling,Ill.(1)N15	5.35	5.60
Struthers,O. Y1 ..	5.35	5.60
Torrance,Cal. C11	6.10	...
Worcester A7 ...	5.65	5.90

WIRE (16 gage)

	An'ld Stone	Galv. Stone
Aliquippa J5	9.80	11.30
Bartonville(1) K4	9.80	11.30
Cleveland A7	9.80	11.30
Crawfrdsvil M8..	9.95	11.45
Fostoria,O. S1 ..	9.90	11.40
Johnstown B2 ..	9.80	11.30
Kokomo C16 ...	9.80	11.30
Minnequa C10 ..	9.40	10.90
Palmer,Mass. W12	9.35	10.85
Pitts.,Cal. C11 ..	9.75	11.25
Prtsmth.(18) P12	9.80	11.30
SparrowsPt. B2..	9.90	11.40
Waukegan A7 ..	9.80	11.30

WIRE, Galv'd ACSR for Cores

Roebling,N.J. R5 .....8.45

WIRE, Tire Bead

Roebling,N.J. R5 ....10.80

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2 ...126	
Aliquippa,Pa. J5 126	
Atlanta A11 128	
Bartonville,Ill.(19) K4 ..126	
Crawfordsville M8 129	
Donora,Pa. A7 126	
Duluth,Minn. A7 126	
Fairfield,Ala. T2 126	
Houston,Tex. S5 134	
Johnstown,Pa. B2 126	
Joliet,Ill. A7 126	
KansasCity,Mo. S5 138	
Kokomo,Ind. C16 128	
Minnequa,Colo. C10 131	
Monessen,Pa. P7 126	
Pittsburg,Calif. C11 146	
Portsmouth,O.(18) P12..126	
Rankin,Pa. A7 126	
So.Chicago,Ill. R2 126	
So.San.Fran.,Calif. C10..146	
SparrowsPoint,Md. B2 ..128	
Sterling,Ill.(1) N15 126	

FENCE POSTS

	Col.
Duluth A7	*116*
Huntington,W.Va. W7 ..116	
Johnstown,Pa. B2 112	
Joliet,Ill. A7 112	
Minnequa,Colo. C10 121	
Moline,Ill. R2 116	
Williamspt,Pa. S19 120	

WOVEN FENCE,9-15½Ga. Col.

Ala.City,Ala.,17-18ga.R2 198
AlabamaCity,Ala. R2 ...116
Aliquip.,Pa.9-14½ga, J5.116
Atlanta A11 118
Bartonville,Ill.(19) K4 ..116
Crawfordsvil,Ind. M8 ..119
Donora,Pa. A7 116
Duluth A7 116
Houston,Tex. S5 124
Fairfield,Ala. T2 116
Johnstown,Pa. B2 116
Johnstn,17ga.,6" B2 190
Johnstn,17ga.,4" B2 193
Joliet,Ill. A7 116
KansasCity,Mo. S5 128
Kokomo,Ind. C16 118
Minnequa,Colo. C10 121
Monessen,Pa. P7 116
Pittsburg,Calif. C11 139
Portsmouth,O.(18) P12..116
Rankin,Pa. A7 116
So.Chicago,Ill. R2 116
Sterling,Ill.(1) N15 116

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2 ..113
Atlanta A11 114
Bartonville,Ill.(19) K4 ..113
Chicago W13 113
Crawfordsville M8 116
Donora,Pa. A7 113
Duluth A7 113
Fairfield,Ala. T2 113
Joliet,Ill. A7 113
KansasCity,Mo. S5 125
Kokomo,Ind. C16 115
Minnequa,Colo. C10 118
Pittsburg,Calif. C11 137
Portsmouth,O.(18) P12..113
So.Chicago,Ill. R2 113
So.SanFran.,Calif. C10..137
SparrowsPoint,Md. B2 ..115
Sterling,Ill.(1) N15 113

NAILS & STAPLES, Stock To Dealers & Mfrs. (7) Col.

AlabamaCity,Ala. R2 ...106
Aliquippa,Pa. J5 106
Atlanta A11 108
Bartonville,Ill.(19) K4 ..106
Chicago,Ill. W13 106
Cleveland A9 112
Crawfordsville M8 109
Donora,Pa. A7 106
Duluth A7 106
Fairfield,Ala. T2 106
Galveston,Tex. D7 114
Houston,Tex. S5 114
Johnstown,Pa. B2 106
Joliet,Ill. A7 106
KansasCity,Mo. S5 118
Kokomo,Ind. C16 108
Minnequa,Colo. C10 111
Monessen,Pa. P7 106
Pittsburg,Calif. C11 125
Portsmouth,O. P12 106
Rankin,Pa. A7 106
So.Chicago,Ill. R2 106
SparrowsPoint,Md. B2 ..108
Sterling,Ill.(1) N15 106
Torrance,Calif. C11 126
Worcester,Mass. A7 112

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2 ..5.35
Bartonville,Ill.(19) K4 ..5.35
Crawfordsville,Ind. M8..5.50
Donora,Pa. A7 .....5.35
Duluth A7 .....5.35
Johnstown,Pa. B2 ....5.35
Joliet,Ill. A7 .....5.35
Kokomo,Ind. C16 .....5.45
Minnequa,Colo. C10 ....5.60
Pittsburg,Calif. C11 ....6.30
Portsmouth,O. P12 ....5.35
Rankin,Pa. A7 .....5.35
So.Chicago,Ill. R2 .....5.35
SparrowsPoint,Md. B2 ..5.45
Worcester,Mass. A7 ....5.65

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3..$6.75
Wheeling,W.Va. W10 ..6.75

AXLES

Fairfield,Ala. T2 .....5.25
Gary,Ind. C3 .....5.25
Ind.Harbor,Ind. S13 ...5.25
Johnstown,Pa. B2 ....5.25
McKeesRocks,Pa. C3 ..5.25

TIE PLATES

Fairfield,Ala. T2 .....4.20
Gary,Ind. C3 .....4.20
Ind.Harbor,Ind. I-2 ...4.20
Lackawanna,N.Y. B2 ...4.20
Minnequa,Colo. C10 ...4.20
Pittsburg,Calif. C11 ...4.35
Pittsburgh R2 .....4.20
Seattle B3 .....4.65
Steelton,Pa. B2 .....4.20
Torrance,Calif. C11 ....4.35
Weirton,W.Va. W6 ....4.20

JOINT BARS

Bessemer,Pa. C3 .....4.40
Fairfield,Ala. T2 .....4.40
Ind.Harbor,Ind. I-2 ...4.40
Joliet,Ill. C3 .....4.40
Lackawanna,N.Y. B2 ...4.40
Minnequa,Colo. C10 ....4.40
Steelton,Pa. B2 .....4.40

TRACK BOLTS (20) Treated

Fairfield,Ala. T2 .....8.50
KansasCity,Mo. S5 ....9.10
Lebanon,Pa.(32) B2 ..8.85
Minnequa,Colo. C10 ....8.60
Pittsburgh,Pa. O3, P14.9.10
Seattle B3 .....9.35

STANDARD TRACK SPIKES

Fairfield,Ala. T2 .....5.35
Ind.Harbor,Ind. I-2, Y1..5.35
KansasCity,Mo. S5 ....5.85
Lebanon,Pa. B2 .....5.60
Minnequa,Colo. C10 ....5.60
Pittsburgh J5 .....5.60
Seattle B3 .....6.10
So.Chicago,Ill. R2 .....5.35
Struthers,O. Y1 .....5.35
Youngstown R2 .....5.35

ROPE WIRE

	Mild Plow	Plow	Imp. Plow
Bartonville,Ill. K4	8.05	8.05	8.30
Buffalo W12	8.05	8.05	8.30
Cleveland A7	8.05	8.05	8.30
Donora,Pa. A7	8.05	8.05	8.30
Fostoria,O. S1	8.05	8.05	8.30
Johnstown,Pa. B2	7.50	7.80	8.20
Monessen,Pa. P7	8.05	8.05	8.30
NewHaven,Conn. A7	8.35	8.35	8.60
Palmer,Mass. W12	8.05	8.05	8.30
Portsmouth,O. P12	8.05	8.05	8.30
Roebling,N.J. R5	8.35	8.35	8.60
SparrowsPoint,Md. B2	7.60	7.90	8.30
Struthers,O. Y1	8.05	8.05	8.30
Trenton,N.J. A7	8.35	8.35	8.60
Waukegan,Ill. A7	8.05	8.05	8.30
Williamsport,Pa. B2	7.60	7.90	8.30
Worcester,Mass. J4, T6	8.35	8.35	8.60

RAILS

	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails. 60 lb Under
Bessemer,Pa. C3	3.40	3.30	3.35	3.75
Ensley,Ala. T2	3.40	3.30	...	3.75
Fairfield,Ala. T2	...	...	...	3.75
Gary,Ind. C3	3.40	3.30	3.35	...
Huntington,W.Va. W7...	...	...	...	3.75
Ind.Harbor,Ind. I-2	3.40	3.30	3.35	...
Johnstown,Pa. B2	...	...	...(16)	3.75
Lackawanna B2	3.40	3.30	...	3.75
Minnequa,Colo. C10	3.40	3.30	...	4.25
Steelton,Pa. B2	3.40	3.30	...	...

TOOL STEEL

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	21.00	18W,4Cr,3V	126.00
Extra Carbon	24.50	18W,4Cr,2V,9Co	185.50
Spec. Carbon	29.50	18W,4Cr,2V,6Co	169.50
Oil Hardening	32.00	18.25W,4.25Cr,1V,4.75Co	156.50
Cr Hot Wrk.	32.00	20.25W,4.25Cr,1.6V,12.25Co	293.50
Hi-Carbon-Cr	57.50	1.5W,4Cr,1V,8.5Mo	71.50
18W,4Cr,1V	100.00	6.4W,4.5Cr,1.9V,5Mo	76.50
18W,4Cr,2V	113.00	6W,4Cr,3V,6Mo	97.00

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M9, M14, R2, S8, T7, U4, V2, V3.

Key to Producing Companies

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M10 Missouri-Illinois Furnace
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.
N2 National Supply Co.
N3 National Tube Co.
N5 Nelsen Steel & Wire Co.
N6 New EngHighCarb. Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Co.
N14 Nrthwst. Steel Roll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg.Co.
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills.
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R7 Rotary Electric Steel Co.
R8 Reliance Div.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U4 Universal Cyclops Steel
V2 Vanadium Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 Wstrn.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W16 Worth Steel Co.
W18 Wyckoff Steel Co.
Y1 Youngstwn Sheet & Tube

(1) Chicago Base. (2) Angles. (3) Merchant. (4) Reinforcing. (5) Philadelphia del. (6) Chicago or Birm. Base. (7) To jobbers, 3 cols. lower. (8) 16 gage and heavier. (9) 6 in. and narrower. (10) Pittsburgh Base. (11) Cleveland & Pittsburgh Base. (12) Worcester, Mass. Base. (13) 3"& wider; over ½" to under 3" 5.15c. (14) Also wide flange beams. (15) ½" and thinner. (16) 40 lb and under. (17) Flats only. (18) To dealers. (19) Chicago & Pittsburgh Base. (20) Deduct 0.25c for untreated. (21) New Haven, Conn. Base. (22) Del. San Fran. Bay area. (23) Angles 1"x1" to 1¼"x1¼" only. (24) Deduct 0.35c for finer than 15 Ga. (25) Up to 0.035 C; 4.40c, 0.035 C and over. (26) Reinforcing, mill shipments; to consumers, 4.83c; fabricated to fabricators, 4.58c. (28) Bonderized. (29) 0.26-0.40 C. (30) 0.40 C and less. (31) Not annealed. (32) Untreated. (33) To jobbers, deduct 20 cents. (34) 6.70c for cut lengths. (35) 72" and narrower. (36) 54" and narrower. (37) 15 Ga. & lighter; 60" & narrower. (38) 14 Ga. & lighter; 48" & narrower. (39) 48" and narrower.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	36.5	34.5	...	8.5	9	...
¼	6.0	0.42	33.5	31.5	...	9.5	11	...
⅜	6.0	0.57	29	27	...	5.5	8	...
½	8.5	0.85	40.5	38.5	39.5	24.0	22.0	23.0
¾	11.5	1.13	43.5	41.5	42.5	28.0	26.0	27.0
1	17.0	1.68	46.0	44.0	45.0	31.0	29.0	30.0
1¼	23.0	2.28	46.5	44.5	45.5	31.5	29.5	30.5
1½	27.5	2.73	47.0	45.0	46.0	32.0	30	31.0
2	37.0	3.68	47.5	45.5	46.5	32.5	30.5	31.5
2½	58.5	5.82	48.0	46.0	47.0	33.0	31.0	32.0
3	76.5	7.62	48.0	46.0	47.0	33.0	31.0	32.0

Column A: Etna, Pa. N2; Monaca, Pa. P9; Sharon, Pa. M6; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 1½ percentage points lower on ⅛", 2 points lower on ¼", 3 points lower on ⅜", W10. Wheatland, Pa., 2 pts lower on ⅛" through ⅜", W9. Following make ½" and larger: Lorain, O. N3; Youngstown, plus 42% on 3½" and 4", R2; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11 points lower on ½" and larger continuous weld and 31% on 3½" and 4".

Columns B & E: Sparrows Point Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y1.

Column D: Etna, Pa. N2; Monaca, Pa. P9; Sharon, Pa. M6; Butler, Pa., ⅛" through ⅜", F6; Benwood, W. Va., except 3½ points lower on ⅛", 2½ pts on ¼", 3 pts on ⅜" W10. Wheatland, Pa., except 2 pts lower on ⅛" through ⅜", W9. Following make ½" and larger: Lorain N3; Youngstown, plus 26.5% on 3½" and 4", R2; Youngstown, Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11 points lower on ½" and larger continuous weld and 15.5% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.65	36.0	20.5	36.0	20.5
2½	58.5	5.82	39.0	23.5	39.0	23.5
3	76.5	7.62	39.0	23.5	39.0	23.5
3½	92.0	9.20	41.0	25.5	41.0	25.5
4	$1.09	10.89	41.0	25.5	41.0	25.5
5	1.48	14.81	41.0	25.5	41.0	25.5
6	1.92	19.18	41.0	25.5	41.0	25.5

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5; Lorain, O. N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft. inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	12.36	14.39	13.96	13.96
1¼	13	14.63	17.05	14.19	16.54
1½	13	16.17	19.02	15.68	18.45
1¾	13	18.39	21.64	17.84	20.99
2	13	20.61	24.24	19.99	23.51
2¼	13	22.96	27.03	22.27	26.22
2½	12	25.29	29.76	24.53	28.87
2¾	12	27.71	32.58	26.88	31.60
2¾	12	29.36	34.53	28.48	33.49
3	12	30.82	36.27	29.90	35.18
3¼	11	35.87	42.22	34.79	40.95
3½	11	38.52	45.35	37.36	43.99
4	10	47.82	56.25	46.39	54.56
4½	9	63.37	74.59	61.47	72.35
5	9	73.37	86.32	71.17	83.73
6	7	112.62	132.51	....	....

Boiler tube producers include Babcock & Wilcox Tube Co., National Tube Co., Globe Steel Tubes Co., Pittsburgh Steel Co., Republic Steel Corp., Standard Tube Co.

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates Carbon Base 10%	Plates Carbon Base 20%	Strip Cold-Rolled Carbon Base 10% Both sides	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Copper Base Both Sides
302 ...	....	....	....	19.75	21.50–22.50	75.00
304 ...	22.50	26.50	....	20.75	22.50–24.00	77.00
305 ...	....	....	....	....	....	79.00
309 ...	27.00	31.00	....	....	....	....
310 ...	32.50	36.50	....	....	....	105.00
316 ...	27.00	31.00	....	26.00	28.00–32.00	....
317 ...	30.50	34.50	....	....	....	....
318 ...	29.50	33.50	....	....	....	....
321 ...	23.50	27.50	....	23.00	25.00	90.00
347 ...	25.00	29.00	....	24.00	26.00–30.00	94.00
405 ...	18.75	24.75	....	....	....	....
410 ...	18.25	24.25	....	....	....	....
430 ...	18.25	24.25	....	....	....	....
Nickel .	27.50	34.50	31.50 41.00	....	....	88.00
Inconel.	36.00	46.00	....	....	....	115.00
Monel .	29.00	37.00	26.50 33.50	....	....	83.00
Copper*	....	....	19.75† 23.75†	....	....	....

* Deoxidized. † Deduct 4.25c for hot-rolled. Production joints for carbon base products: Stainless plates and sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16 and Coatesville, Pa. L7; nickel, inconel and monel-clad plates, Coatesville L7; nickel, monel and copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	27
⅝-in. & ⅝-in.	29
¾-in. and larger	26
Longer than 6 in.:	
All diams.	22
Lag bolts, all diams.:	
6 in. and shorter	30
over 6 in. long	28
Ribbed Necked Carriage	26
Blank	40
Plow	40
Step, Elevator, Tap, and Sleigh Shoe	28
Tire bolts	20
Boiler & Fitting-Up Bolts	37

NUTS

H.P. & C.P. Reg. & Heavy Square:	
½-in. and smaller	25
⅝-in. & ⅝-in.	23
¾-in.-1½-in.	23
1⅝ in. and larger	16

H.P. Hex.:	Reg.	Heavy
½-in. & smaller	33	29
⅝-in. & ⅝-in.	28	25
¾-in.-1½-in.	25	23
1⅝ in. & larger	17	16

C.P. Hex.:		
½-in. & smaller	33	29
⅝-in. & ⅝-in.	30	27
¾-in. & 1½ in.	27	24
1⅝ in. & larger	20	17

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

½-in. and smaller	Hvy. Reg. Lght. 35 41 41
⅝-in. & ⅝-in.	30 36 36
¾-in.-1½ in.	27 31 33
1⅝-in. & larger	17 21 ..

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish	63.5 & 10
Plated finishes	50 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
¼-in. through ⅝-in.	50
¾-in. through 1 in.	43
Longer than 6 in.:	
¼-in. through ⅝-in.	33
¾-in. through 1 in.	13

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	46
1 in. and smaller diam. x over 6 in.	33

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	41
¼-in. diam. & larger	24
N.F. thread, all diams.	18

RIVETS

F.o.b. midwestern plants

Structural ½-in., larger	7.25c
⅞-in., under	43 off

Washers, Wrought

F.o.b. shipping point, to jobbers ..... Net to $1 off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches Diam.	Inches Length	Cents per lb.
17,18,20	60,72	16.00
8 to 16	48,60,72	16.50
7	48,60	17.75
6	48,60	19.00
4, 5⅛	40	19.50
3	40	20.50
2½	24,30	21.00
2	24,30	23.00
	CARBON	
40	100,110	7.50
35	100,110	7.50
30	84,110	7.50
24	72 to 104	7.50
17 to 20	34,90	7.50
14	60,72	8.00
10,12	60	8.25

STAINLESS STEEL

(cents per pound)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	37.50	30.50	28.50
302...	37.50	33.00	28.50
303...	39.50	36.50	31.00
304...	39.50	35.00	30.00
309...	52.00	52.00	41.50
316...	53.00	55.00	46.00
321...	45.50	44.50	34.00
347...	50.00	48.50	38.50
410...	33.00	27.00	23.00
416...	33.50	33.50	23.50
420...	40.50	43.50	28.50
430...	35.50	27.50	23.50
501...	24.00	22.50	11.50
502...	25.00	23.50	12.50

Baltimore, Types 301 through 347 sheets, except 309 E2.

Baltimore, bars, wire and structurals A10.

Brackenridge,Pa., sheets A4

Bridgeville, Pa., bars, wire, sheets & strip, except Type 309 strip quoted 51.00c U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.

Carnegie, Pa., strip except Type 416; Type 309 strip quoted 51.00c S18.

Cleveland, strip, except Type 309 quoted 51.00c, and except Type 416 A7.

Detroit, strip, except Type 309 M1.

Dunkirk, N.Y., bars, wire A4.

Duquesne, Pa., bars C3.

Gary, Ind., sheets except Type 416 C3.

Harrison, N. J., strip C18.

Massillon, all products, except Type 309 bars, wire & structurals quoted 42.00c, Type 501, 10.50c, Type 502 11.50c R2.

McKeesport, Pa., bars; sheets except Type 416, C3.

McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.

Middletown, O., sheets and strip, except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars C3.

Pittsburgh, sheets C18.

Reading, Pa., bars & strip except Type 309 bars quoted 42.00c C4.

So. Chicago, Ind., bars & structurals C3.

Syracuse, N. Y., bars, wire & structurals C18

Titusville, Pa., bars U4.

Wallingford, Conn., strip, except 309, W2 quotes ¼-cent higher.

Washington, Pa., bars, sheets & strip except Type 309 strip quoted 51.00c J3.

Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 58.00c, strip 60.00c W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, except Type 309 quoted 51.00c A4.

Youngstown, strip C8.

COAL, CHEMICALS

Spot, cents per gallon, ovens	
Pure benzol	22.00
Toluol, one deg.	19.00-24.75
Industrial xylol	20.50-26.50
Per ton bulk, ovens	
Sulphate of ammonia	$45.00
Per pound, ovens	
Phenol, 40 (carlots, returnable drums)	13.25
Do., less than carlots	14.00
Do. tank cars	12.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $37; less than 60%, $34.

Imported, net ton, duty paid, metallurgical grade, $39-$40.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh)

	Cents
Sponge Iron:	
98+% Fe, carlots	15.00
Swedish, c.l.f. New York, in bags	7.40-8.50
Electrolytic Iron:	
Annealed, 99.5% Fe	39.50
Unannealed, 99+% Fe	33.50
Unannealed, 99+% Fe (minus 325 mesh)	48.50
Carbonyl Iron:	
97.9-99.8%, size 5 to 10 microns	70.00-135.00
Aluminum:	
Carlots, freight allowed	27.00
Atomized, 500-lb drums, freight allowed	30.00
Brass, 10-ton lots	23.25-26.25
Copper:	
Electrolytic	27.75
Reduced	27.00
Lead	18.50
Manganese:	
Minus 100-mesh	52.00-55.00
Minus 35 mesh	48.00
Minus 200 mesh	56.00
Nickel, unannealed	61.00-66.00
Silicon	34.00-40.00
Solder (plus cost of metal)	8.50
Stainless Steel, 302	75.00
Tin	86.50
Zinc, 10-ton lots	15.25-18.00
	Dollars
Tungsten:	
99%, minus 80 to 200 mesh, freight allowed, over 1000 lb	2.90
1000 lb	2.95
less than 1000 lb	3.00
98.8%, minus 65 mesh, freight allowed, 1000 lb and over	2.90
less than 1000 lb	3.00
Molybdenum:	
99%, minus 80 to 200 mesh, over 500 lb	2.25
200 to 500 lb	2.60
less than 200 lb	2.75
82-88%, freight allowed, 2000 lb and over	2.40
less than 2000 lb	2.45
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price per Net Ton

BEEHIVE OVENS

Connellsvil, fur.	$13.00-13.50
Connellsvil, fdry.	15.00-16.00
New River, foundry	18.00
Wise county, foundry	15.35
Wise county, furnace	14.60

OVEN FOUNDRY COKE

Kearny, N. J., ovens	$22.00
Everett, Mass., ovens	
New England, del.‡	22.70
Chicago, ovens	21.00
Chicago, del.	†22.45
Detroit, del.	24.91
Terre Haute, ovens	21.20
Milwaukee, ovens	21.75
Indianapolis, ovens	19.85
Chicago, del.	23.32
Cincinnati, del.	22.77
Detroit, del.	23.75
Ironton, O., ovens	20.40
Cincinnati, del.	22.71
Painesville, O., ovens	21.90
Buffalo, del.	24.02
Cleveland, del.	23.62
Erie, del.	22.04
Birmingham, ovens	*18.70*
Philadelphia, ovens	20.45
Swedeland, Pa., ovens	20.40
Portsmouth, O., ovens	19.50
Detroit, ovens	20.65
Detroit, del.	*21.70
Buffalo, del.	22.95
Flint, del.	23.00
Pontiac, del.	21.95
Saginaw, del.	23.30

Includes representative switching charge of: *, $1.05; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.50. ‡ Or within $4.03 freight zone from works.

UNIVERSITY OF MICHIGAN LIBRARIES

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		Bars			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R. 15 Ga.	Galv. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140§		Carbon	Floor
New York (city)	5.75	6.84	7.20	6.04	...	5.85	6.64	8.60	5.65	5.90	7.34
New York(c'try)	5.55	6.54	6.90	5.84	...	5.65	6.44	8.40	5.45	5.70	7.14
Boston (city) ..	5.75	6.68	7.19	5.98	...	5.80	6.50	8.70	5.75	6.08	7.28
Boston (c'try) .	5.55	6.48	6.99	5.78	...	5.60	6.30	8.50	5.55	5.88	7.08
Phila. (city) ..	6.45	6.60	6.95	5.90	...	5.75	6.46	8.40	5.50	5.70	6.80
Phila. (c'try) .	6.20	6.35	6.70	5.65	...	5.50	6.21	8.15	5.25	5.45	6.55
Balt. (city) ...	5.25	6.59	6.66	5.79	...	5.69	6.39	...	5.69	5.40	7.04
Balt. (c'try) ..	5.05	6.39	6.46	5.59	...	5.49	6.19	...	5.49	5.20	6.84
Norfolk, Va. ..	6.10	...	...	...	...	6.15	7.20	...	6.20	6.15	7.55
Wash. (w'hse).	5.46	...	...	6.00	...	5.90	6.62	...	5.90	5.61	7.25
Buffalo (del.)..	5.20	5.95	6.94	5.56	...	5.20	5.85	10.43††[3]	5.30	5.60	6.90
Buffalo (w'hse)	5.05	5.80	6.79	5.41	...	5.05	5.65	9.90††[3]	5.15	5.45	6.75
Pitts. (w'hse)..	5.05	5.80[3]	6.45-6.70	5.20	6.15	5.00	5.75	9.55††	5.05	5.15	6.40
Detroit (w'hse)	5.33	6.08[3]	7.09	5.49	...	5.39	6.03	9.86††[3]	5.44	5.59	6.68
Cleveland (del.)	5.25	6.00	7.15	5.44	6.20	5.32	5.95	8.31	5.37	5.52	6.87
Cleve. (w'hse).	5.05	5.80	6.95	5.24	6.00	5.12	5.75	8.16	5.17	5.32	6.67
Cincin. (w'hse).	5.32	5.84	6.29	5.49	...	5.39	6.10	9.90††[3]	5.44	5.59	6.75
Chicago (city)..	5.25	6.00[3]	6.90	5.30	...	5.20	5.85	9.75††[3]	5.25	5.40	6.60
Chicago (w'hse)	5.05	5.80[3]	6.70	5.10	...	5.00	5.65	9.55††[3]	5.05	5.20	6.40
Milwaukee(city)	5.39	6.14[3]	7.04	5.44	...	5.34	6.09	9.89††[3]	5.39	5.54	6.74
Milwau. (c'try).	5.19	5.94[3]	6.84	5.24	...	5.14	5.89	9.69††[3]	5.19	5.34	6.54
St. Louis(del.).	5.53	6.28	7.18	5.58	...	5.48	6.23	10.03††[3]	5.53	5.68	6.88
St. L. (w'hse).	5.38	6.13	7.03	5.43	...	5.33	6.08	9.88††[3]	5.38	5.53	6.73
Birm'ham (del.)	5.20[10]	5.95	6.30[2]	5.25[10]	...	5.15[10]	6.88	...	5.20[10]	5.35[10]	7.63[10]
Birm'hm(w'hse)	5.05[10]	5.80	6.15[2]	5.10[10]	...	5.00[10]	...	...	5.05[10]	5.20[10]	...
Omaha, Nebr...	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Los Ang. (city)	5.95	7.15	7.60	6.00	8.25	5.95	7.70	...	5.85	5.95	8.15
L. A. (w'hse)..	5.80	7.00	7.45	5.85	8.10	5.80	7.55	...	5.70	5.80	8.00
San Francisco..	6.25[9]	8.60[2]	7.50[3]	6.75[9]	8.25[3]	6.15[9]	7.80[9]	...	6.00[9]	6.15[9]	8.10[9]
Seattle-Tacoma.	6.70[7]‡	8.15[3]	...	6.90	...	6.35	8.50	10.10	6.20	6.35[7]	8.40[7]
Kans. (w'hse)..	5.65	6.40	7.30	5.70	...	5.60	6.35	10.10	5.65	5.80	7.00

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ as rolled; †† as annealed. Base quantities: 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 1000 lb and over; [1]—1500 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [4]—400 to 1499 lb; [5]—1000 to 1999 lb; [6]—1000 lb and over; [7]—300 to 999 lb; [8]—300 to 499 lb; [9]—400 to 3999 lb; [10]—500 to 9999 lb inc.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., $107; Ottawa, Ill., $106. Hard-fired, $141 and $135, respectively at various points.

High-heat Duty: Salina, Pa. $91; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, or Curwensville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., Ottawa, Ill., $86.

Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clearfield, Pa., Olive Hill, Hitchins, or Haldeman, Ky., Athens, or Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $80.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., Bessemer, Ala., $72; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., Chester, W. Va., New Cumberland, W. Va., $60.

Wire Cut: Chester, W. Va., Wellsville, O., New Cumberland, W. Va., $58.

MALLEABLE BUNG BRICK

St. Louis, Mo., Olive Hill, Ky., $96; Ottawa, Ill., $90; Beach Creek, Pa., $86.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $86; Hays, Pa., $91; Joliet or Rockdale, Ill., E. Chicago, Ind., $95; Lehi, Utah, Los Angeles, $101.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $84.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $85.

BASIC BRICK

(Base prices per net ton; f.o.b. works, Baltimore or Chester, Pa.)

Burned chrome brick, $66; Chemical-bonded chrome brick, $69; magnesite brick, $91; chemical-bonded magnesite, $80.

MAGNESITE

(Base prices per net ton, f.o.b. works, Chewelah, Wash.)

Domestic dead-burned, ⅝" grains; Bulk, $30.50-$31; single paper bags, $35-$35.50.

DOLOMITE

(Base prices per net ton)

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, Pa., Millville, W. Va., Narlo, Millersville, Martin, Gibsonburg, Woodville, O., $12.25; Thornton, McCook, Ill., $12.35; Dolly Siding, Bonne Terre, Mo., $12.45.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports. Future increases in upper lake rail freight rates, dock handling charges and taxes thereon are for buyer's account.

Old range bessemer	$8.10
Old range nonbessemer	7.95
Mesabi bessemer	7.85
Mesabi nonbessemer	7.70
High phosphorus	7.70

EASTERN LOCAL ORE

Cents per unit, del E. Pa.

Foundry and basic 56.62% concentrates contract	16.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hemitites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Wolframite, scheelite, net ton unit, duty paid	$20-$22

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid. 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00

South African Transvaal

44% no ratio	$17.00-18.00
45% no ratio	18.00-18.50
48% no ratio	26.00-27.00
50% no ratio	27.00-27.50

Brazilian

44% 2.5:1 lump	$32.00

Rhodesian

45% no ratio	$20.00-21.00
48% no ratio	28.00-29.00
48% 3:1 lump	36.00-37.00

Domestic—rail nearest seller

48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb, molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $65, Palmerton, Pa.; $66, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $172 per gross ton of alloy, cl., packed, $184; gross ton lots, packed, $199; less gross ton lots, packed, $216; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., or Welland, Ont. Base price: $174, f.o.b. Birmingham and Johnstown, Pa., furnaces; $172, Sheridan, Pa.; $175, Etna, Pa. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, San Francisco, Portland, Oreg. Shipment from Chicago warehouse, ton lots, $214; less gross ton lots, $231 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Carload, lump, bulk, max. 0.10% C, 24.75c per lb of contained Mn, carload packed 25.5c, ton lot 26.6c, less ton 27.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75%C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Carload, lump, bulk 18.15c per lb of contained Mn, carload packed 18.9c, ton lot 20.0c, less ton 21.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 29c per lb of metal; packed, 35.5c; ton lot 31.25c, less ton lot 33.25c. Delivered. Spot, add 2c.

Manganese, Electrolytic: Less than 250 lb, 35c; 250 lb to 1999 lb, 32c; 2000 to 35,999 lb, 30c; 36,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn., Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 8.95c per lb of alloy, carload packed, 9.70c, ton lot 10.60c, less ton 11.60c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk, 20.5c per lb of contained Cr, c.l., packed 21.4c, ton lot 22.55c, less ton 23.95c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

(*Please turn to page* 138)

Metal Traders Watch Legislators

Congressional action on mine subsidies, silver purchases, tin selling and stockpiling of strategic materials will have important bearing on nonferrous metal markets

New York—With major nonferrous metal markets marking time pending settlement of the coal controversy, traders are directing more attention to developments in Washington. The federal government's policies affecting metals have been of paramount importance to the industry for several years.

Among the more important bills now being considered are the O'Mahoney mine subsidy bill and the Green bill to discontinue purchase of silver for monetary purposes. Formulation of government policy under existing laws, such as metal stockpiling, operation of the Texas tin smelter and allowances for depletion for metal mines in computing taxes, etc. are also being watched closely.

Mining Subsidies — Proponents of the mine subsidy bill (S. 2105) are hopeful the House Rules Committee will approve the legislation, permitting early debate. If the committee does not act on the bill, it may come up before the House under the 21-day rule on Feb. 27. Considerable opposition has developed, both inside and outside Congress, indicating that it faces a rough time before final action is taken. Felix E. Wormser, vice president, St. Joseph Lead Co., opposes the bill because "besides promoting inefficiency, it would impair our priceless free market."

Mr. Wormser would seek relief by: "Emergency taxes or tariffs on lead and zinc imports from countries that have devalued their currencies and changes in our tax laws to stimulate mining investment . . . to make the long shots attractive."

Senator McCarran (D., Nev.) and several other western congressmen have pledged a finish fight against the Green bill (S. 2829) to discontinue purchase of silver for monetary purposes. The Colorado Mining Association passed a resolution at its 1950 convention condemning the bill and pointing out that silver runs in mineral veins with several other metals. Hence, government purchase of silver helps defray production costs of lead, zinc, copper and other base metals, the resolution said.

Seeks Tax Relief—Following the administration's decision not to recommend elimination of the 15 per cent depletion exemption for metal mines, Senator McCarran proposed: Changes in income tax regulations to exempt mines until the original exploration and development investment has been recovered; allowance under income tax laws as operating expenses of development cost after discovery of a mine; other income tax allowance for losses from unprofitable mining ventures as ordinary deductions against current income.

Present indications are the government will withdraw from commercial tin business, confining its activities to accumulation of a strategic stockpile. J. W. Considine, controller of Reconstruction Finance Corp. informed the House Appropriations Committee that RFC estimates a loss of $8 million on the corporation's tin program in 1950 compared with a profit of $9 million in 1949. RFC also estimates a loss of $1,209,000 on the tin program in 1951.

Tin Stockpile—Some authorities estimate the government's holdings around 90,000 tons of grade A metal, including about 55,000 tons purchased last year. Although the goal has not been announced officially, it is believed between 200,000 and 300,000 tons. These large requirements have cushioned the fall in prices since last September. The price decline is due largely to the fact production is now far in excess of actual consumption. The government's stockpiling needs will be taken into consideration next month when the Tin Study Group meets to consider proposals for establishment of an international scheme to regulate world production.

Import Duties—Imports of tin ore are now exempt from duties levied on the gold content of imported ores. President Truman signed a bill Feb. 8, making the exemption on tin ores the same as already applies to zinc and copper ores. This will benefit tin-ore extracting firms using a new process to refine low-grade tin ore.

Copper — Producers and custom smelters shipped 111,668 tons of refined copper to domestic makers of copper goods in January, reports the Copper Institute. This is 4006 tons more than the 107,662 tons shipped in December and is the fifth consecutive month in which shipments have exceeded 100,000 tons.

Stocks of refined metal held by producers also were sharply reduced for the fifth time. At the end of January they totaled 101,070 tons, a decline of 14,957 tons from the 116,027 tons on hand at the end of December. For the five months period from the end of August, 1949, through January, 1950, refined copper supplies held by producers were reduced 116,097 tons from the 217,167 tons on hand at the end of August, 1949.

Domestic production of copper (from mines and custom smelter scrap intake) aggregated 85,612 tons during January against 79,390 tons in December.

United States refineries turned out 95,229 tons of refined metal last month against 94,947 tons in December.

Zinc—Stocks of slab zinc dropped 12,628 tons in January to 81,593 tons as shipments increased to 82,576 tons, the highest since November, 1948, while production eased to 69,948 tons from 71,327 tons in December. Of January shipments, 69,020 tons were to domestic consumers, 402 tons on export and drawback, and 13,154 tons on government account. Unfilled orders at the end of January totaled 52,941 tons against 42,625 tons at the end of last year.

Lead—Demand for lead continues steady and in sufficient volume to more than equal intake. Buying is well diversified, with battery makers taking fair tonnages. Prices are unchanged.

Tin—Straits tin prices for all delivery positions have advanced to the RFC offering price of 74.50c, New York. This reflects strength in the Singapore market.

Refined Silver Output Drops

New York—Production of refined silver declined about 15 per cent in 1949 to 62,785,000 ounces from 73,791,000 ounces in 1949, reports the American Bureau of Metal Statistics. December output dropped to 4,939,000 ounces from 5,901,000 ounces in November and was well under the 6,342,000 ounces produced in December, 1948. Imports of refined bullion during 1949 increased to 63,794,000 ounces from 49,633,000 ounces in the preceding year.

New Refinery Nears Completion

Salt Lake City, Utah—Kennecott Copper Corp.'s new electrolytic copper refinery at Garfield, Utah, is about 70 per cent completed. Officials expect to get the plant in operation next summer.

Aluminum Output Declines

New York — Primary aluminum production declined 37,411,179 lb in 1949, reports Donald M. White, secretary, Aluminum Association. The decrease is attributed largely to two major industry strikes. Total output was 1,206,947,014 lb compared with 1,244,358,193 lb in 1948.

December production increased to 82,322,329 lb from 71,729,519 lb in November and compared with 113,840,942 lb in May, 1949, the year's high.

Shipments of aluminum sheet, plate, and strip by association member companies amounted to 62,524,984 lb in December, bringing the year's total to 777,910,955 lb. This represented a drop of about 37 per cent from the 1,250,469,806 lb shipped in 1948.

The monthly, quarterly and year's totals in pounds follows:

Period	Production of Primary Aluminum	Shipments of Sheet, Plate and Strip
1949	1,206,947,014	777,910,955
4th Qtr.	245,631,623	191,830,368
Dec.	82,322,329	62,524,984
Nov.	71,729,519	54,065,069
Oct.	91,579,775	75,240,315
3rd Qtr.	315,039,869	153,709,667
Sept.	99,477,024	64,105,244
Aug.	104,009,815	47,892,491
July	111,553,030	41,711,932
2nd Qtr.	330,361,673	173,572,494
June	108,368,166	46,498,310
May	113,840,942	55,403,001
Apr.	108,152,565	71,671,183
1st Qtr.	315,913,849	258,798,426
Mar.	109,703,497	90,961,687
Feb.	99,497,123	79,135,473
Jan.	106,713,229	88,701,266

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NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 18.50c, Conn. Valley, Lake, 18.62½c, Conn. Valley.

Brass ingot: 85-5-5-5 (No. 115) 16.75-18.25c; 88-10-2 (No. 215) 25.25c; 80-10-10 (No. 305) 21.75c; No. 1 yellow (No. 405) 14.25-16.00c.

Zinc: Prime western 9.75c, brass special 10.00c, intermediate 10.25c, East St. Louis; high grade 10.85c, delivered.

Lead: Common, 11.80c; chemical, 11.90c; corroding, 11.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.00c, pigs 16.00c. Base prices for 10,000 lb and over, f.o.b. shipping point.

Secondary Aluminum: Piston alloys 16.50-16.75c; No. 12 foundry alloy (No. 2 grade) 16.00-16.25c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 17.75-18.00c; grade 2, 17.25-17.50c; grade 3, 15.75-16.00c; grade 4, 15.25-15.50c. Prices include freight at carload rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over, 20.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt del., 74.50c; February del. 74.50c; March del. 74.50c; April del. 74.50c. Chinese, 99% tin, prompt del., nominal.

RFC selling prices for prompt delivery, ex-dock New York or f.o.b. Texas City, Tex.: Grade A, 99.8% or higher (including Straits) 74.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 27.25c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 27.75c; f.o.b. Laredo, Tex., for bulk shipments. Foreign, 99%: Chinese, 24.00c; English, Belgium, prompt, 25.00c, New York.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 40.00c; 25-lb pigs, 42.50c; "XX" nickel shot, 43.50c; "F" nickel shot or ingots, for addition to cast iron, 40.50c. Prices include import duty.

Mercury: Open market, spot, New York $71-$74 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $24.50 per lb contained Be.

Cadmium: "Regular" straight or flat forms, $2 del.; special or patented shapes, $2.15.

Cobalt: 97-98%, $1.80 per lb for 550 lb (keg); $1.82 per lb for 100 lb (case); $1.87 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 73.25c per oz.

Platinum: $66-$69 per ounce.

Palladium: $24 per troy ounce.

Iridium: $100 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill; based on 18.50-cent copper.)

Sheet: Copper 32.18; yellow brass 28.69; commercial bronze, 95%, 32.10; 90%, 31.61; red brass, 85%, 30.60; 80%, 30.12; best quality, 29.58; nickel silver, 18%, 42.27; phosphor-bronze, grade A, 5% 50.90.

Rods: Copper, hot-rolled 28.03; cold-drawn 29.28; yellow brass free cutting, 23.19; commercial bronze, 95% 31.79; 90% 31.30; red brass 85% 30.29; 80% 29.81.

Seamless Tubing: Copper 32.22; yellow brass 31.70; commercial bronze 90% 34.27; red brass 85% 33.51; 80% 33.03.

Wire: Yellow brass 28.98; commercial bronze, 95% 32.39; 90% 31.90; red brass, 85% 30.89; 80% 30.41; best quality brass 29.87.

Copper Wire: Bare soft, f.o.b., eastern mills, 100,000 lb lots 22.55, l.c.l. 23.17, c.l. 22.67; weatherproof, f.o.b. eastern mills, 100,000 lb lots 24.85, l.c.l. 25.60, c.l. 25.10; magnet, delivered, c.l. 28.50, 15,000 lb or more 28.75, l.c.l. 29.25.

ALUMINUM

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	26.9	...	...
0.135-0.096	12-48	27.4	...	...
0.095-0.077	12-48	27.9	26.0	29.6
0.076-0.068	12-48	28.5	26.2	29.8
0.067-0.061	12-48	28.5	26.2	29.8
0.060-0.048	12-48	28.7	26.4	30.1
0.047-0.038	12-48	29.1	26.6	30.4
0.037-0.030	12-48	29.5	27.0	30.9
0.029-0.024	12-48	29.9	27.3	31.3
0.023-0.019	12-36	30.5	27.7	31.8
0.018-0.017	12-36	31.1	28.3	32.6
0.016-0.015	12-36	31.8	28.9	33.5
0.014	12-24	32.7	29.7	34.6
0.013-0.012	12-24	33.6	30.4	35.5
0.011	12-24	34.6	31.3	36.7
0.010-0.0095	12-24	35.6	32.3	38.0
0.009-0.0085	12-24	36.8	33.4	39.5
0.008-0.0075	12-24	38.1	34.6	41.1
0.007	12-18	39.5	35.9	42.9
0.006	12-18	41.0	37.2	47.0

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	——Hexagonal—— R317-T4	17S-T4
0.125	48.0	...	...
0.156-0.203	41.0	...	...
0.219-0.313	38.0	...	...
0.344	37.0	...	47.0
0.375	36.5	45.5	44.0
0.406	36.5	...	...
0.438	36.5	45.5	44.0
0.469	36.5	...	...
0.500	36.5	45.5	44.0
0.531	36.5	...	...
0.563	36.5	...	41.5
0.594	36.5	...	...
0.625	36.5	43.0	41.5
0.656	36.5	...	...
0.688	36.5	...	41.5
0.750-1.000	35.5	40.5	39.0
1.063	35.5	...	37.5
1.125-1.500	34.5	39.0	37.5
1.563	34.5	...	36.5
1.625	33.5	...	36.5
1.688-2.000	33.5	...	...
2.125-2.500	32.5	...	...
2.625-3.375	31.5	...	...

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more, $17.00 per cwt; add 50c per cwt, 10 sq ft to 140 sq ft. Pipe: Full coils, $17.00 per cwt. Traps and bends: List price plus 45%.

ZINC

Sheets, 15.50c f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 15.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 14.00c; over 12-in., 15.00c.

NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 60.00c. Strip, cold-rolled, 66.00c. Rods and shapes, 56.00c. Plates 58.00c. Seamless tubes, 89.00c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 47.00c; Strip, cold-rolled, 50.00c. Rods and shapes, 45.00c. Plates, 46.00c. Seamless tubes, 80.00c. Shot and blocks, 40.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.312 in. in diameter, less than 25 lb, 52.00-56.00c; 25 to 99 lb, 42.00-46.00c; 100 lb to 4000 lb, 35.00-36.00c.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 25.50c; 5 tons and over 26.00c; 1 to 5 tons, 26.50c; less than 1 ton, 27.00c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 28.84cc; oval 28.34c; cast 26.87c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 46.50c f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 18.00c; 1000 to 19,000 lb, 17.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 250 lb, 25.75c; over 250 lb, 24.75c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 56.00c; 10,000 to 30,000 lb, 57.00c; 3000 to 10,000 lb, 58.00c; 500 to 3000 lb, 59.00c; 100 to 500 lb, 61.00c; under 100 lb, 64.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 26.50c; 400-lb bbls, 24.50c, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over 91.00c, 500 to 999 lb, 91.5c; 200 to 499 lb, 92.00c; less than 200 lb, 93.5c; ball, 1000 lb and over, 93.25c; 500 to 999 lb, 93.75c; 200 to 499 lb 94.25c; less than 200 lb, 95.75c f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers 58.2c; 100 or 300 lb drums only, 100 to 500 lb, 49.9c; 600 to 1900 lb, 47.6c; 2000 to 9900 lb, 45.8c, f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100-lb drums 38.00c, f.o.b. Niagara Falls, N. Y.; 40.50c, f.o.b. Cleveland; 39.25c, del., Detroit and Philadelphia.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb 84.50c; more than 2000 lb, 82.50c, f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, 70.80c; 100 lb kegs 71.80c, f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	15.50	15.50	14.75
Yellow brass	12.50	12.25	11.37½
Commercial Bronze			
95%	14.50	14.25	13.75
90%	14.25	14.00	13.50
Red brass			
85%	14.00	13.75	13.25
80%	13.62½	13.37½	12.87½
Best Quality (71-80%)	13.37½	13.12½	12.62½
Muntz Metal	11.50	11.25	10.75
Nickel, silver, 10%	14.50	14.25	7.25
Phos. bronze, A	16.75	16.50	15.50
Naval brass	12.00	11.75	11.25
Manganese bronze	12.00	11.75	11.12½

BRASS INGOT MAKERS BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 15.50; No. 2 copper 14.50; light copper 13.50; composition red brass 12.75; radiators 10.25; heavy yellow brass 9.75.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 15.50; No. 2 copper 14.50; light copper 13.50; refinery brass (60% copper) per dry copper content 13.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 13.50-13.75, No. 2 12.50-12.75; light copper 11.50-11.75; No. 1 composition red brass 11.00-11.25; No. 1 composition turnings 10.25-10.50; mixed brass turnings 6.25-6.50; new brass clippings 10.50-11.00; No. 1 brass rod turnings 9.25-9.50; light brass 6.00-6.25; heavy yellow brass 7.25-7.50; new brass rod ends 9.75-10.00, auto radiators, unsweated 8.50-8.75; cocks and faucets, 8.50-8.75; brass pipe 9.00-9.25.

Lead: Heavy 9.25-9.50, battery plates 4.50; linotype and stereotype 10.00-10.25; electrotype 9.00-9.25; mixed babbitt 9.25-9.50.

Zinc: Old zinc 4.25-4.75; new die cast scrap 4.00-4.50; old die cast scrap 3.00-3.25.

Tin: No. 1 pewter 39.00-41.00; block tin pipe 60.00-62.00, No. 1 babbitt 30.00-32.00.

Aluminum: Clippings 2S 10.50-11.00; old sheets 7.50-8.00, crankcase 7.50-8.00, borings and turnings 3.00-3.50.

DAILY PRICE RECORD

1949	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Feb. 14-16	18.50	11.80	9.75	74.50	17.00	27.25	40.00	73.25
Feb. 10-11	18.50	11.80	9.75	74.375	17.00	27.25	40.00	73.25
Feb. 7-9	18.50	11.80	9.75	74.50	17.00	27.25	40.00	73.25
Feb. 2-6	18.50	11.80	9.75	74.375	17.00	27.25	40.00	73.25
Feb. 1	18.50	11.80	9.75	74.25	17.00	28.75	40.00	73.25
Jan. Avg.	18.50	11.80	9.81	76.02	17.00	29.92	40.00	73.25
Jan. 30-31	18.50	11.80	9.75	74.25	17.00	28.75	40.00	73.25
Jan. 25-28	18.50	11.80	9.75	75.00	17.00	28.75	40.00	73.25

NOTE: **Copper:** Electrolytic, del. Conn. Valley; **Lead,** common grade, del. E. St. Louis; **Zinc,** prime western, del. St. Louis; **Tin,** Straits, del. New York; **Aluminum** primary ingots, 99%, del.; **Antimony,** bulk, f.o.b. Laredo, Tex.; **Nickel,** electrolytic cathodes, 99.9%, base sizes at refinery unpacked; **Silver,** open market, New York. **Prices,** cents per pound; except silver, cents per ounce.

IRON AND STEEL SCRAP

Consumer prices, except as otherwise noted, including brokers' commissions, as reported to STEEL, Feb. 16, 1950; gross tons except as noted. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Feb. 16	$27.67
Feb. 9	27.42
Jan. 1950	26.93
Feb. 1949	38.48
Feb. 1945	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania

PITTSBURGH

No. 1 Heavy Melt.	*32.00*
No. 2 Heavy Melt.	*29.00*
No. 1 Busheling	*32.00*
No. 1 Bundles	*32.00*
No. 2 Bundles	24.00-25.00*
No. 3 Bundles	23.00-24.00*
Heavy Turnings	26.00-27.00
Machine Shop Turnings	21.50-22.00†
Mixed Borings, Turnings	21.50-22.00†
Short Shovel Turnings.	25.00-26.00
Cast Iron Borings	24.00-25.00
Low Phos. Steel	32.00-33.00*

Cast Iron Grades*

No. 1 Cupola Cast	34.00-35.00
No. 1 Machinery Cast	38.00-39.00
Charging Box Cast	31.00-32.00
Heavy Breakable Cast	29.00-30.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	32.50-33.00
Axles	35.00-36.00
Rails, Random Lengths	35.50-36.00
Rails, 2 ft. and under.	39.00-40.00
Rails, 18 in. and under	40.00-41.00
Railroad Specialties	34.00-35.00
Angles, Splice Bars	32.00-33.50*

* Nominal.
† Crushers' buying prices.

CLEVELAND

No. 1 Heavy Melt. Steel	$28.00-28.50
No. 2 Heavy Melt. Steel	25.50-26.00
No. 1 Busheling	28.00-28.50
No. 1 Bundles	28.00-28.50
No. 2 Bundles	22.00-22.50
Machine Shop Turnings	18.00-18.50
Mixed Borings, Turnings	21.00-21.50
Short Shovel Turnings.	21.00-21.50
Cast Iron Borings	21.00-21.50
Low Phos.	29.00-29.50
Cut Structurals	31.00-31.50

Cast Iron Grades

No. 1 Cupola	*41.50-42.00*
Carging Box Cast	*38.00-39.00*
Stove Plate	35.50-36.50
Heavy Breakable Cast.	31.00-31.50
Unstripped Motor Blocks	31.00-32.00
Brake Shoes	28.50-29.50
Clean Auto Cast	*42.00-43.00*
No. 1 Wheels	*36.50-37.00*
Burnt Cast	31.50-32.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	32.50-33.00
R.R. Malleable	38.50-39.00
Rails, 3 ft and under.	41.00-42.00
Rails, 18 in. and under	43.00-44.00
Rails, Random Lengths	38.00-39.00
Cast Steel	34.00-35.00
Railroad Specialties	35.00-35.50
Uncut Tires	36.00-37.00
Angles, Splice Bars	39.50-40.50

VALLEY

No. 1 Heavy Melt. Steel	$31.00-31.50
No. 2 Heavy Melt. Steel	29.00-30.00
No. 1 Bundles	31.00-31.50
No. 2 Bundles	24.50-25.50
Machine Shop Turnings	21.50-22.50
Short Shovel Turnings.	23.50-24.00
Cast Iron Borings	23.50-24.00
Low Phos.	32.50-33.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	33.00-33.50

PHILADELPHIA

No. 1 Heavy Melt. Steel	$23.50
No. 2 Heavy Melt. Steel	21.50
No. 1 Busheling	21.50
No. 1 Bundles	23.50
No. 2 Bundles	*18.00-18.50*
Machine Shop Turnings	*16.00*
Short Shovel Turnings.	17.50
Mixed Borings, Turnings	15.00-15.50
Bar Crop and Plate.	25.50-26.00
Punchings & Plate Scrap	25.50-26.00
Cut Structurals	25.00-26.00
Elec. Furnace Bundles.	24.50
Heavy Turnings	23.50
No. 1 Chemical Borings	29.00
Knuckles and couplers.	29.00
Steel car wheels	29.00

Cast Iron Grades

No. 1 Cupola Cast	30.00
No. 1 Machinery Cast.	36.00-37.00
Charging Box Cast	*31.50-32.00*
Heavy Breakable Cast	*31.50-32.00*
Unstripped Motor Blocks	*25.00*
Clean Auto Cast	36.00-37.00
No. 1 Wheels	37.00
Malleable	*38.00*

CINCINNATI

No. 1 Heavy Melt. Steel	$26.00
No. 2 Heavy Melt. Steel	23.00
No. 1 Busheling	26.00
No. 1 Bundles	26.00
No. 2 Bundles	20.00
Machine Shop Turnings	13.00
Short Shovel Turnings.	16.00
Mixed Borings, Turnings	16.00
Cast Iron Borings	16.00

Cast Iron Grades

No. 1 Cupola Cast	38.00
Charging Box Cast	32.00
Heavy Breakable Cast.	32.00
Stove Plate	30.00
Unstripped Motor Blocks	22.00
Brake Shoes	22.00
Clean Auto Cast	38.00
Drop Broken Cast	42.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	30.00
R.R. Malleable	33.00
Rails, Rerolling	34.00
Rails, Random Lengths	33.00
Rails, 18 in. and under	42.00

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 2 Heavy Melt. Steel	$21.00-22.00
No. 1 Bundles	23.00-24.00
No. 2 Bundles	20.00-21.00
No. 1 Busheling	23.00-24.00
Machine Shop Turnings	12.00-13.00
Mixed Borings, Turnings	12.00-13.00
Short Shovel Turnings.	14.00-15.00
Cast Iron Borings	16.00-17.00
Punchings & Plate Scrap	23.00-24.00

Cast Iron Grades

No. 1 Cupola Cast	33.00-34.00
Heavy Breakable Cast.	29.00-30.00
Clean Auto Cast	35.00-36.00

BUFFALO

No. 1 Heavy Melt. Steel	*$28.00-28.50*
No. 2 Heavy Melt. Steel	25.50-26.00
No. 1 Bushelings	25.50-26.00
No. 1 Bundles	26.50-27.00
No. 2 Bundles	24.00-24.50
Machine Shop Turnings	18.00-18.50
Mixed Borings, Turnings	19.00-19.50
Cast Iron Borings	19.00-19.50
Short Shovelings	19.50-20.00
Low Phos.	29.00-29.50

Cast Iron Grades

No. 1 Machinery	35.00-36.00
No. 1 Cupola	32.00-33.00
Malleable	31.00-32.00

Railroad Scrap

Rails, 2 ft. and under.	38.00-39.00
Scrap rails	35.00-35.50
Specialties	33.00-34.00

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	$20.25-20.75
No. 2 Heavy Melt. Steel	17.50-18.00
No. 1 Busheling	17.50-18.00
No. 1 Bundles	20.25-20.75
No. 2 Bundles	16.00
Machine Shop Turnings	10.50-11.00
Mixed Borings, Turnings	10.50-11.00
Short Shovel Turnings.	10.50-11.00
Punchings & Plate Scrap	19.50-20.00
Cut Structurals	19.50-20.00
Elec. Furnace Bundles	19.50-20.00

Cast Iron Grades

No. 1 Cupola Cast	*24.00-25.00*
No. 1 Machinery	*26.00-27.00*
Charging Box Cast	*24.50-25.00*
Heavy Breakable	*24.50-25.00*
Unstripped Motor Blocks	20.00-21.00
Malleable	34.00

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	$19.00-20.00
No. 2 Heavy Melt. Steel	16.00
No. 1 Bundles	19.00-20.00
No. 1 Busheling	16.00-16.50
Machine Shop Turnings	10.00-10.50
Mixed Borings, Turnings	10.00-10.50
Short Shovel Turnings.	13.00-13.50
Bar Crops and Plate.	21.00-22.00
Punchings & Plate,Scrap	21.00-22.00
Chemical Borings	19.00-19.50

Cast Iron Grades

No. 1 Cupola Cast	27.50-30.50
Mixed Cast	21.00-22.00
Heavy Breakable Cast.	24.50-25.50
Stove Plate	21.50-22.50
Unstripped Motor Blocks	17.50-18.50

CHICAGO

No. 1 Heavy Melt. Steel	$27.00-28.00
No. 2 Heavy Melt. Steel	25.50-26.50
No. 1 Bundles	27.00-28.00
No. 2 Bundles	*23.00-24.00*
Machine Shop Turnings	18.00-19.00
Mixed Borings, Turnings	18.00-19.00
Short Shovel Turnings.	20.00-21.00
Cast Iron Borings	18.00-19.00
Low Phos.	30.50-31.50
Elec. Furnace Bundles.	27.00-28.00
Heavy Turnings	23.00-24.00
Cut Structurals	29.00-30.00

Cast Iron Grades

No. 1 Cupola Cast	40.00-41.00
Clean Auto Cast	41.50-42.50
No. 1 Wheels	33.00-34.00
Stove Plate	31.00-32.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	28.50-29.50
Malleable	35.00-36.00
Rails, Rerolling	*40.00-41.00*
Rails, Random Lengths	32.00-33.00
Rails, 2 ft and under.	39.00-40.00
Rails, 18 in. and under	40.00-41.00
Railroad Specialties	30.00-31.00
Angles, Splice Bars	34.00-35.00

BIRMINGHAM

No. 1 Heavy Melt. Steel	*$23.00*
No. 2 Heavy Melt. Steel	*22.00*
No. 1 Busheling	19.00
No. 2 Bundles	*20.00*
Machine Shop Turnings	22.50
Mixed Borings, Turnings	17.00
Short Shovel Turnings.	23.00
Cast Iron Borings	19.00
Bar Crops and Plate	*27.00-28.00*
Cut Structurals	*27.00-28.00*

Cast Iron Grades

No. 1 Cupola Cast	35.00
Stove Plate	30.00
No. 1 Wheels	nominal

Railroad Scrap

No. 1 R.R. Heavy Melt.	*25.00-26.00*
R.R. Malleable	nominal
Rails, Rerolling	33.00-35.00
Rails, 3 ft and under.	nominal
Angles and Splice Bars	nominal

ST. LOUIS

No. 1 Heavy Melt. Steel	$28.00-29.00
No. 2 Heavy Melt. Steel	24.00-25.00
Machine Shop Turnings	14.00-15.00
Short Shovel Turnings.	18.00-19.00

Cast Iron Grades

No. 1 Cupola Cast	35.00-36.00
Charging Box Cast	29.00-30.00
Heavy Breakable Cast.	28.00-29.00
Brake Shoes	27.00-28.00
Clean Auto Cast	36.00-38.00
Burnt Cast	27.00-28.00

Railroad Scrap

R.R. Malleable	*31.00-33.00*
Rails, Rerolling	36.00-37.00
Rails, Random Lengths	*30.00-31.00*
Rails, 3 ft. and under	*35.00-36.00*
Uncut Tires	27.00-28.00
Angles, Splice Bars	32.00-33.00
Railroad Specialties	30.00-31.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	$20.00
No. 2 Heavy Melt. Steel	18.00
Nos. 1 & 2 Bundles	16.00
No. 3 Bundles	*13.00*
Machine Shop Turnings	*9.00*

Cast Iron Grades

No. 1 Cupola Cast	*30.00-32.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00
Rails, Random Lengths	20.00

SEATTLE

No. 1 Heavy Melt. Steel	$18.00
No. 2 Heavy Melt. Steel	18.00
No. 1 Busheling	15.50
Nos. 1 & 2 Bundles	16.00
No. 3 Bundles	nom.
Machine Shop Turnings	13.00
Mixed Borings, Turnings	13.00
Punchings & Plate Scrap	*27.50*
Cut Structurals	*27.50*

Cast Iron Grades

No. 1 Cupola Cast	*27.50-30.00*
Heavy Breakable Cast.	*25.00*
Stove Plate	*25.00*
Unstripped Motor Blocks	*18.00*
Malleable	*25.00*
Brake Shoes	*20.00*
Clean Auto Cast	*27.50*
No. 1 Wheels	*27.50*

Railroad Scrap

No. 1 R.R. Heavy Melt.	19.00
Railroad Malleable	25.00
Rails, Random Lengths	19.00
Angles and Splice Bars	19.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	$20.00
No. 2 Heavy Melt. Steel	18.00
Nos. 1 & 2 Bundles	16.00
No. 3 Bundles	nom.
Machine Shop Turnings	9.00
Mixed Borings, Turnings	9.00
Punchings & Plate Scrap	24.00
Elec. Furnace Bundles.	25.00

Cast Iron Grades

No. 1 Cupola Cast	27.00-30.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00
Rails, Rerolling	32.00

HAMILTON, ONT.

(Delivered prices)

Heavy Melt.	$24.00
No. 1 Bundles	24.00
Mechanical Bundles	23.00
Mixed Steel Scrap	20.00
Mixed Borings, Turnings	18.00
Rails, Remelting	24.00
Rails, Rerolling	27.00
Busheling	18.00
Bushelings new factory, prep'd	22.00
Bushelings new factory, unprep'd	17.00
Short Steel Turnings	18.00

Cast Iron Grades

Cast	40.00-43.00*

* F.o.b. shipping point.

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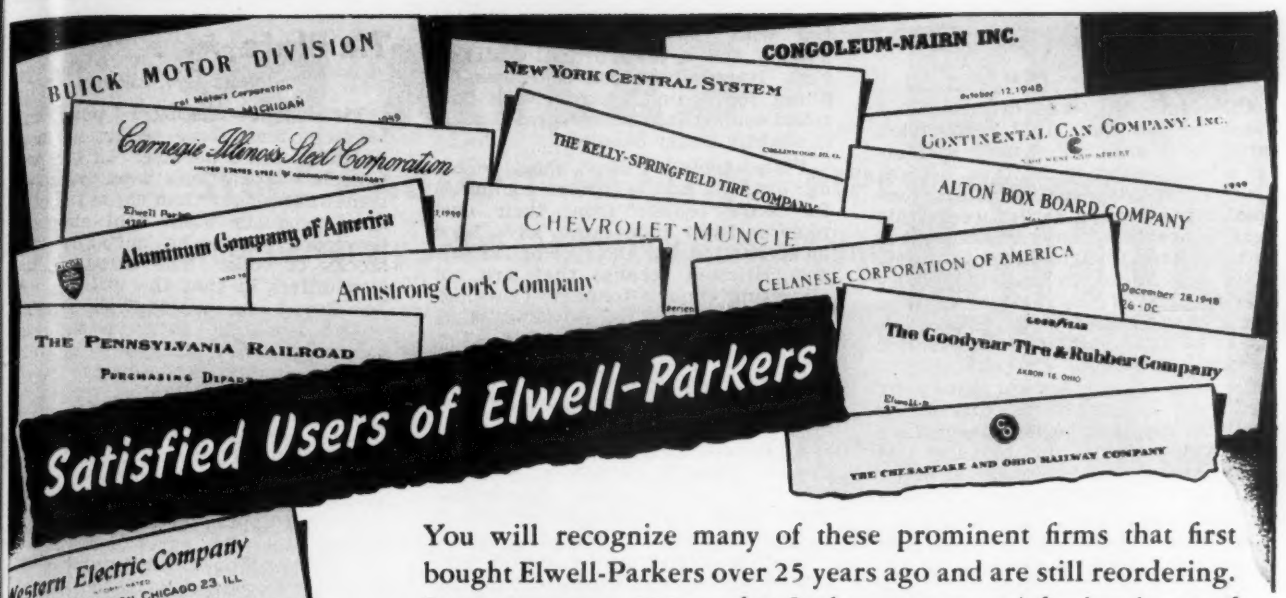

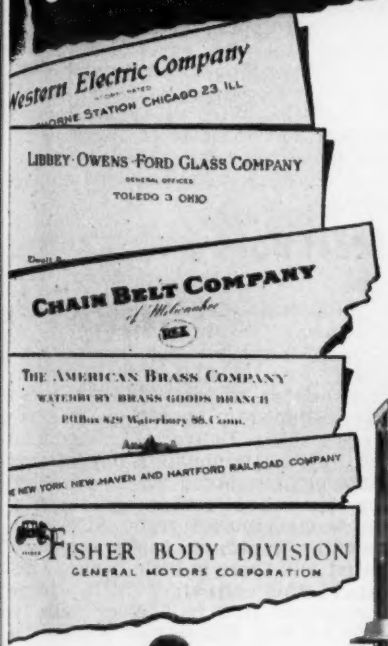

You will recognize many of these prominent firms that first bought Elwell-Parkers over 25 years ago and are still reordering. Some own over 100 trucks. Such customer satisfaction is proof of their confidence in Elwell-Parker and its products.

Even though Elwell-Parker knows through long experience that electric trucks are best for most conditions, a line of gas-powered units is being added to meet special requirements. Thus these users need not seek other sources of supply. *Why not join them?*

For example, here are two trucks rated at 2,000 lbs., one—

is electric powered, which makes it more economical under average operating conditions;

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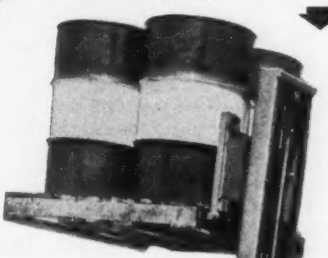
F-26T, Electric



GF-26T, Gas

Free Bulletin on Scientific Materials Handling. For your copy, write The Elwell-Parker Electric Co., 4101 St. Clair Avenue, Cleveland 3, Ohio.

ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

Established 1893

Sheets Strip . . .

Sheet and Strip Prices, Page 117 & 118

Cleveland—No letup in consuming pressure for the light, flat-rolled products is anticipated until well into second quarter, if then. Right now demand is even more insistent than it has been in earlier weeks this year, probably because of anticipated further supply tightening in event mills are forced to curtail production because of the coal strike. The automotive industry is taking as much tonnage as the producers will permit. Although Chrysler plants have been closed several weeks by strike no holdup of shipments has yet been reported. Appliance makers also are pressing for tonnage and miscellaneous consumers are exerting every effort to fill their requirements.

Pittsburgh—Sheet and strip production is expected to be well sustained this week regardless of developments in UMW dispute. Chief concern of producers is continuation of adequate electric power supply from utilities in this district. Coal stocks are badly depleted but sufficient to maintain steelmaking schedules until late this month. The tight supply situation in galvanized sheets is expected to be further accentuated with added requirements ranging between 30,000 and 40,000 tons for grain storage program.

Simplification of hot-rolled strip extra card soon will be published by a leading producer. The revisions will have no effect on previous price pattern since it involves only the consolidation of mill edge and cut edge extra tables into one table applicable to all mill edge extras and another for cut edge. The mill edge extras for widths of 2 inches and under have been consolidated in the size extra table for mill edge coils.

New York—Sheet sellers are far behind on commitments. If the coal suspension continues much longer conditions will become decidely worse. Complicating the situation is continued heavy pressure from consumers—pressure that became even more pronounced as the coal controversy became more critical. Manufacturers of refrigerators, stoves and household equipment are operating at a rate about as high as steel supply will permit. Jobbers likewise are pressing for tonnage.

Demand for stainless steel for building trim and similar uses is gaining. Larger tonnage also is going into restaurant equipment and supplies. Demands of the dairy and chemical industries lag. Producers of stainless are booked ahead eight to ten weeks on sheets, but less on stainless bars.

Boston—Volume of flat-rolled orders waiting to be definitely scheduled is heavy. Some mills have opened books for second quarter and are sold through that period. Others tentatively accepted orders earlier but are only now entering this tonnage for production. Meanwhile, sold-up position of most mills on carbon sheets, including galvanized, tends to ease off new buying, although pressure for delivered steel continues unabated. Outlook for more tonnage for consumers next quarter is clouded and delinquent volume will be substantial with the automotive industry holding the key to overall distribution. Narrow cold strip schedules are filling for second quarter with hot-rolled coming into nonintegrated mills in slightly better balance.

Philadelphia — Most sheet sellers are oversold and hence are coming in for some rebuke from their customers. Even those who have been more cautious in their commitments are criticized because they are not allocating enough tonnage. One midwestern mill only recently opened its books for second quarter, but allotments to local consumers are limited. Some sellers claim their arrearages are almost as heavy as they were late last year.

Chicago— There is little talk around steel offices now of a slump after the end of June. All indications are that companies which have not adopted allocation plans will do so soon; those with such programs make no bones about the fact they are oversold and fighting unsuccessfully to meet delivery promises on both hot and cold-rolled sheets. Conversion tonnage is now booked by one producer to capacity through June on cold-rolled and into May and June on hot-rolled. While much of present pressure is attributable to consumer products, appliances and automobiles, capital goods are apparently on a rising sales curve and some of the more depressed items are beginning to make a better showing. Stainless steel sales are improved, one consumer reporting it plans to double its purchases for tank construction. Suppliers to Chrysler are now beginning to be affected by the strike, although it is rather dubious that any tonnage will be freed to other consumers by their curtailments.

Cincinnati—Allotment plan will be continued by district mills to spread available tonnage of sheets in second quarter. No slackening in automotive needs is apparent, and makers of household equipment are in the market for larger volume than in the latter part of 1949. Mill reserves of coal and coke are small, but no curtailment in output has been ordered.

Birmingham — Sheets remain in tight supply, though supplies have been augmented substantially by the cold reduction mill at Fairfield. Stringency is due to reduced ingot production resulting from the coal strike coupled with heavy demand.

St. Louis—Inquiries for sheets mount, particularly from eastern consumers. Some reflect coal strike hedging desires; others an optimism for the steel goods industry the rest of the year. Order-taking here the last two weeks has been heavy, but nearly all from old customers. These are still on allocation. So the inquiries from new buyers are meeting little success. Sheet consumers in this area are generally in a comfortable position.

Los Angeles—Although western steel producers, whose coal sources are not yet affected by the mine shutdown, are not stepping up production, the strike is making itself felt in this district in increased inventory demand. Deliveries are extended on galvanized and light gage sheet and strip.

Tin Plate . . .

Tin Plate Prices, Page 118

Pittsburgh—Threatened power curtailment may force reduction in all finishing mill schedules. In the past, tin plate operations were sustained somewhat longer than those for other steel products when coal shortages developed because of normally large stocks of coils. The current situation differs in that the utilities may be forced to substantially reduce power available to industrial customers. Major tin plate interests have accumulated warehouse stocks for emergency use. Most sellers anticipate full production through third quarter. There is good prospect 1950 output will set a new record.

Chicago—First serious repercussion of the coal shortage on finished steel will appear here this week as Inland Steel Co. curtails operations at the hot-dipped tin products department and tin mills. Other departments being affected by the banking of two additional blast furnaces are the track accessories, No. 2 normalizer, blooming mills and cold mill annealing.

Steel Bars . . .

Bar Prices, Page 117

Pittsburgh—Cold drawers are experiencing steady improvement in new order volume and demand is expected to be sustained well into second quarter at least. Most interests have stepped-up operations from one to two shifts. Deliveries are extended into April. Pronounced improvement in demand is noted for free machining hot-rolled carbon grades from screw machine interests. Automotive industry continues major consumer outlet and there is little concrete evidence this situation will change throughout first half. Most mills are offering late March and April delivery on hot-rolled carbon, relatively prompt delivery still is available on alloys.

Philadelphia—An easing in demand for hot carbon bars appears probable within the next few weeks. Buyers are getting fairly well caught up on inventories and there is likelihood of a continued lag in demand from the heavy industries. Railroad requirements are picking up a little, but the overall outlook in this field is still drab. Little tonnage is coming out from the shipyards and machinery needs are light. On the encouraging side is a mild improvement in agricultural equipment requirements. There may be a flurry of buying in the coal regions, once the labor dispute is settled.

Cleveland—Here and there buyers are specifying a little more actively, but merchant bar business generally is about in the same volume as that of recent weeks. Demand is described as fairly active with mill order backlogs substantial. Tonnage continues to be booked for shipment in about six weeks. Fear of mill curtailments because of the coal strike has not stimulated much additional ordering for inventory. However, the supply of hot bars is not particularly plentiful and converters are having supply difficulties. Bessemer stock is noticeably tighter due to the closing down of a number of converters.

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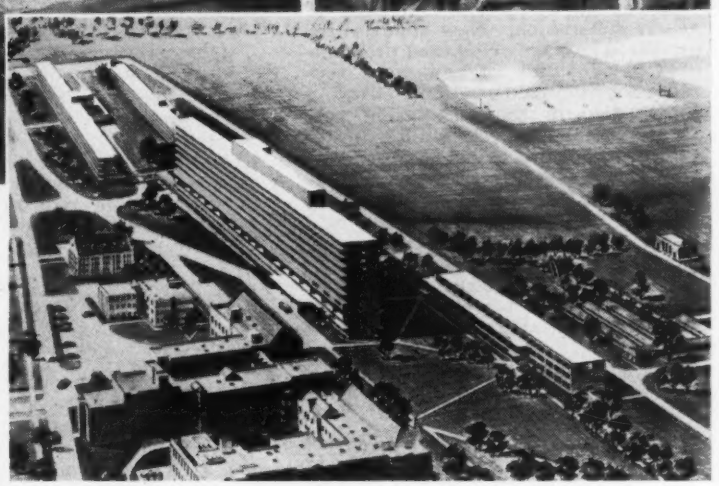

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Structural Shapes . . .

Structural Shape Prices, Page 117

New York—While awards lag, inquiry is improving. Most fabricators, although competing sharply for business, anticipate better buying over coming weeks. Particularly lacking is industrial construction, apart from public utility requirements, and even the latter are not as active as they were last fall.

Standard shapes are in relatively easy supply and generally available within 30 days. Deliveries on wide flange sections range six to eight weeks.

Boston—For the first half at least, fabricated structural steel shops will be well sustained by bridge requirements, plus smaller projects. Estimates are marked by growing competition from district shops now seeking bridge tonnage for the first time since before the war. Plain material prices are subject to competitive influences, with higher extra-carrying shapes quoted $20 to $25 per ton lower by foreign sellers. Some of this steel is being bought.

Pittsburgh—Estimates of structural steel requirements are not yet available for recently approved Equitable Life Assurance Society program to construct three office skyscrapers adjacent to Point Park at cost of nearly $50 million. New inquiries for private jobs have registered little improvement. Bulk of new work represents public construction. Growing competition in the bidding on new inquiries indicates dwindling order backlogs among most fabricators. Higher steel costs generally have been absorbed and, in many instances, fabricators are quoting firm prices at levels below those for similar jobs six months ago.

Philadelphia — Structural inquiry is livelier, and fabricators anticipate a substantial pick-up in new business by spring. Competition among the shops, especially the smaller ones, is keen. Backlogs continue to shrink. Shape deliveries remain fairly easy.

Cleveland—Competition on structural projects is extremely keen. Considerable price shading is reported on fabricated work. Prices of 7.50c and 8.00c, fabricated, are being quoted, which, considering the prevailing price of 3.40c f.o.b. mill on shapes, has many in the trade flabbergasted. There's a lot of "by-guess and by-gosh" bidding these days, report old timers in the business. Recently the low bid on steel for a fair grounds stand was $29,000 against the next lowest bid of $38,500. There were at least 18 bidders on this project.

Considerable new work is shaping up, especially public projects such as hospitals and schools. Bids close Mar. 1 on 200 tons for New York Central Railroad bridge here. Repairs to the Market St. bridge at Youngstown will require a small tonnage.

Chicago—Hectic ordering of flat-rolled products is not repeated in most structural items, although wide flange beams approach the tight position here. Buying for construction work does not seem to be spurred by the coal situation. Probably there is anticipatory ordering from some consuming segments, farm implement and road building equipment makers, primarily, but unbalance in inventory, with plates and sheets tight, is acting to prevent a stampede for shapes.

Los Angeles—Demand for structurals is stronger, particularly wide-flange beams, 2 to 4 in. channels, and bar size angles. A substantial tonnage of structurals will be required for a $1.5 million 10-story apartment building here. Building activity in Los Angeles county is off to a fast start this year. January's total of $22,731,398 in permits issued, exceeds the same month last year by $5,949,439.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 117

Cleveland—Fair number of small projects is keeping suppliers in this area busy. At the same time the outlook for spring and summer demand is promising with numerous public building projects being figured. Competition is extremely keen on current proposals and some price cutting is reported. Builders Structural Steel Co. is reported low bidder on the bars for the new Hoban High School to be erected at Harvard and E. 183rd St. at a cost of $1,250,000. Bethlehem Steel Co. booked 110 tons for a building for Kenyon College at Gambier, O.

Seattle—Washington state has asked bids Feb. 28 for the 1800-foot Snoqualmie Pass snowshed project involving 1210 tons of reinforcing bars. Considerable military construction in Alaska is expected soon calling for sizable reinforcing tonnage. Local mills have reduced backlogs.

Plates . . .

Plate Prices, Page 117

New York—Local plate requirements are light. While the M. W. Kellogg Co. received a contract for construction of an oil refinery in Canada, demand for this type of work continues dull. Shipyards are specifying little and boiler shop business is spotty. Export demand is negligible.

The railroad outlook has been brightened a bit by placing of 4500 freight cars by the New York Central.

Operations at most eastern mills are restircted, mainly due to lack of business. Shipments can still be had within three weeks or less. Where a producer rolls plates only, there is usually enough steel to meet full finishing mill requirements.

Philadelphia—Most eastern plate mills are able to maintain operations on a restricted basis, but are unable to build up much in the way of backlogs. Deliveries can be had within ten days upon occasion, although the average is nearer three weeks. One district mill took off another open hearth last week, while another started operations on a modest basis after a suspension of two weeks.

Cleveland—Plates are moving much more slowly than other leading steel products. With current demand light, competition for going business is keen. Midwestern platemakers are meeting increasing competition from eastern producers who are shipping some tonnage into this territory. While the outlook for plate demand is not particularly promising, sellers are encouraged by signs of a pickup in railroad car business. More freight cars were ordered so far this year than in all of 1949.

Wire . . .

Wire Prices, Page 119

Boston—More screw and other wire users formerly drawing part of requirements from rods are buying finished material, reflecting narrowing spread between the two products. Some larger consumers are not operating their drawing equipment, buying finished stock entirely for current operations. Demand for screws holds up fairly well, but competition operates toward price confusion. Screw capacity bulged substantially during the last ten years and some is beginning to wither. Corbin Screw Division, American Hardware Co., New Britain, Conn., is closing. Demand for most wire products, including specialties, is sustained; buying and pressure from the automobile industry for valve spring wire are strong. Clock spring wire orders are steady with an increase in buying of music wire. Extras on the latter have been revised upward. On numerous products mills are booked well into second quarter.

Foreign nails, in popular sizes, are being received in Philadelphia, with prices estimated at around $2 a keg under domestic offerings.

Cleveland—American Steel & Wire Co. advanced price on fence posts $4 per ton to column 116, effective Feb. 6.

Birmingham — Wire demand continues active. Most wire products, some sizes of nails excepted, are in relatively good supply. Manufacturers' wire and farm wire products are in steady demand. Baling and boxing needs are substantial.

Tubular Goods . . .

Tubular Goods Prices, Page 120

New York—Merchant pipe ranks second to sheets in point of stringency among major steel products, but demand is declining here. Some pipe jobbers are not taking full allotments and considerable price competition is developing. Pipe trade is off seasonally, but a factor beyond this is the lack of industrial work.

Considerable work is going ahead in line pipe construction, although few new contracts have been let. Most makers of line pipe are booked ahead through the greater part of next year.

Los Angeles—Pipe requirements are at the level established in January. Although demand for large pipe is spotty, with most big projects ordered, specifying of 4 to 8 inch diameters for muncipal distributing lines is increasing. Oil industry needs continue sluggish. There is some export demand, one important project being offshore Mexican drilling by the Mexican-American Independent Co.

San Francisco—Some tightness in certain sizes and types of plumbing pipe is reported, but inventories of

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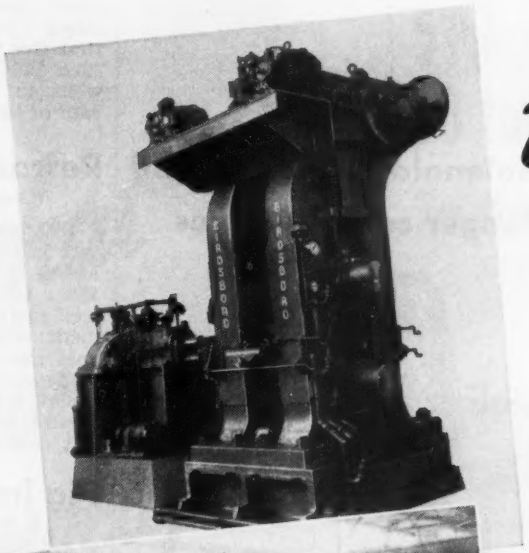

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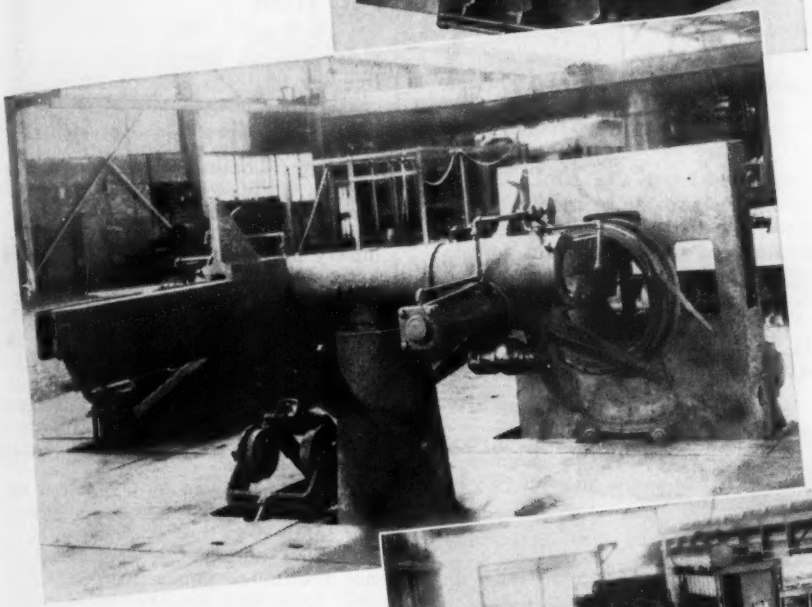

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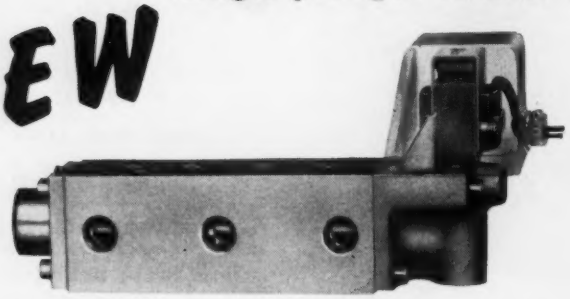

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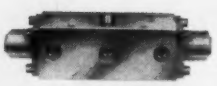

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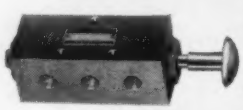

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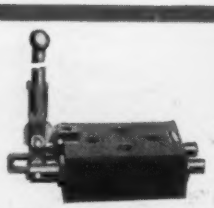

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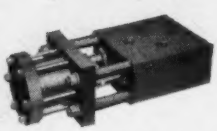

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most types of pipe are plentiful. Demand from oil drillers lags. In the first five weeks of 1950 oil companies filed 166 notices of intention to drill wells in California, about half the rate of last year.

Refractories . . .

Refractories Prices, Page 121

Pittsburgh—All ladle brick interests now quote dry press ladle brick at $60 per 1000 brick and wire cut at $58. Output of refractory brick is well sustained, although some curtailment will be necessary soon unless coal mining operations are resumed. Improvement in refractory brick demand noted immediately following steel strike last fall has leveled off, but continues above pre-strike level.

Pig Iron . . .

Pig Iron Prices, Page 116

Pittsburgh—Demand for merchant foundry iron has altered little in recent weeks despite threat of curtailment in output. Most foundries have ample stocks of basic raw materials to sustain operations from 4 to 6 weeks. Depressed operating outlook among most jobbing foundries and those serving railroad equipment industry is another factor discouraging extensive stocking. Operations at the Trafford foundry of Westinghouse recently resumed following settlement of strike issue, thus easing the growing tight parts supply situation among company's many metalworking plants. The Monaca, Pa., plant of Richmond Radiator Co. was closed last week by walkout of 350 United Steelworkers.

New York—Although pig iron consumers have been showing increasing interest in supply because of the unsettled outlook in coal, they are not too much concerned. They not only have fair stocks, but their own business outlook is not too promising. Most foundries are operating on a restricted basis. They are more concerned about coke, but so far have exerted no real pressure on suppliers. Pig iron production at furnaces supplying this district has undergone some curtailment. In certain cases where furnaces haven't been banked entirely—production has been reduced by "fanning."

Boston—While there is some pick up in pig iron shipments this month, demand lacks snap as foundry melt hovers under 50 per cent. At current consumption, substantial inventories still exist among larger users. Although reduced well below capacity, some production at Everett, Mass., continues to go into stockpile.

Philadelphia — Despite continued strike at a number of A F of L foundries in this immedate area — a strike that has been going on for six weeks—pig iron sellers claim demand for foundry grades has been fairly well sustained by demands from foundries in the outside area. In addition to current needs there has been some anticipatory buying because of the unsettled situation in coal. Demand for basic has eased, although the trend has been cushioned by protective covering. Certain sellers have refused to sell more than current requirements demand.

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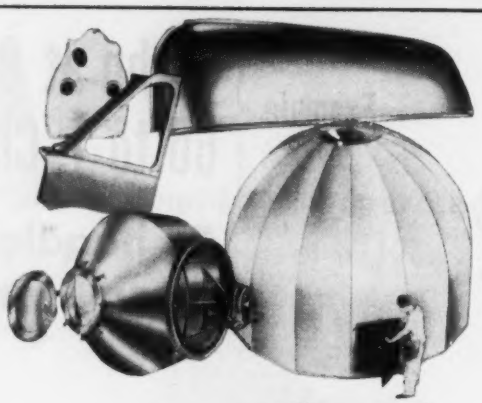

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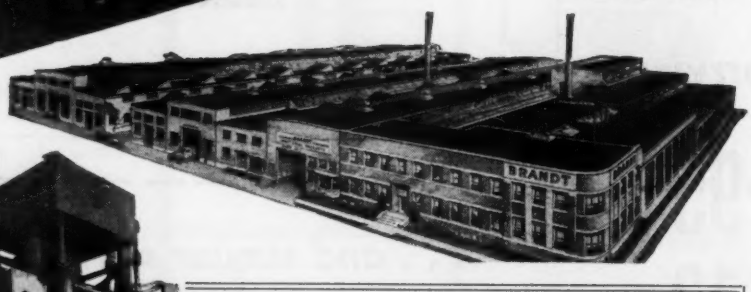

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with only a small amount of free iron available at best, is reported to have reduced prices about $1 a ton.

Buffalo—District pig iron output has slipped an additional six points to 75 per cent of capacity as a result of the coal strike. Republic Steel Corp. has been forced to withdraw its furnace at Troy because of the fuel pinch. While merchant iron sellers report no trouble finding outlets for current output, there is no shortage of stock to fill foundry requirements. A marked falling off has been noted in railroad castings. One of the leading car wheel casting plants in the area has been forced to suspend operations temporarily due to a lack of orders.

Cleveland—Foundries are ordering pig iron more actively against old orders. Some new buying also is noted. Fear of a supply shortage due to blast furnace suspensions only partly accounts for the increased interest. Foundry melting operations are gaining, including jobbing shops. Demand from shops producing sanitaryware and sanitation equipment is especially marked. In fact, all lines associated with building appear busy.

Cincinnati—Buying of pig iron as protection against shortages, as furnaces curtail to save coal, faded on prospects the most severe bottleneck would be in coke. Ovens in this district have been slowed by lack of adequate reserves against continued mining holidays. Available coke tonnage is rationed. Coke prices have been adjusted upward $1 to $20.40 base Ironton, O.

Chicago—Coal is the noose around blast furnace operations and the noose is tightening rapidly. Inland Steel Co., which previously had banked two furnaces to conserve coal, banked "A" stack on Friday and today planned to put "B" out of blast. Lack of iron and gas from these two units will immediately affect steel production, daily output dropping from 9400 tons to 6340 tons. Only three units will be in operation and one of these is scheduled to be taken off within a week. Some other operators are talking curtailment within the week on the basis of coal stocks on hand last week. Carnegie-Illinois Steel Corp. expects to be able to hold full operations through February. Winter coking coal stocks are helping foundrymen in northern Illinois and Wisconsin maintain their operations, but lack of iron may soon be a serious matter. Foundries with plants located downstate have been hesitant to ship any coal to them for fear of confiscation en route.

Birmingham—With two merchant furnaces down, pig iron supplies are becoming more stringent. Pressure for delivery is marked as the district faces further curtailment of production due to the coal strike and orders from distant points are finding their way into the district.

St. Louis—Koppers Co. at Granite City, Ill., has curtailed production to 85 per cent of capacity to stretch coal and coke supplies. Declining coal deliveries already have cut coke oven operations to 65-70 per cent. If the coal strike continues, Koppers' two furnaces, with 1000 tons daily capacity, will be shut down Mar. 1 or soon thereafter. Meanwhile, it has

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only three to four days' supply of iron on the ground, and practically none of the popular grades of basic and malleable. A month's supply is "normal". February orders have been heavy, but apparently little of the demand is attributable to strike-fright stockpiling.

Scrap . . .

Scrap Prices, Page 124

Boston—Normal spread between heavy melting steel grades is wider, $3.00 to $3.50 per ton. Leading district consumer is buying a higher ratio of No. 1 heavy melting and is holding strictly to specifications, while yard stocks of No. 2 are in relatively better supply. Differentials between other grades are out of line in varying degree. Buying of steelmaking scrap is limited and demand for cast is even slower.

Cancellation of commodity rate on steel scrap from Albany, N. Y., to Bridgeport, Conn., has been asked in favor of application of class rates. Charge has been $5.01 ton.

New York—While scrap brokers are offering unchanged prices on steel grades, they have reduced prices on leading cast items. Brokers are now offering to pay $24.00-$25.00 on No. one cupola cast, $26.00-$27.00 on No. one machinery and $24.50-$25.00 on heavy breakable. Charging box cast prices have been adjusted slightly higher to this latter range.

Pittsburgh—Sale of No. 1 heavy melting steel last week at $32 represents advance of 50 cents per ton; No. 2 sold at $29, or $1 above previous nominal quotation. Prices on other grades were firm and unchanged despite continued absence of market activity for dealer scrap. Most mills are waiting out developments in UMW dispute. No serious shortage of scrap is in evidence and this situation would become still easier should mills be forced to drastically curtail output because of depleted coal stocks or restricted electric power supply. However, some mills are using larger proportion of scrap to pig iron in open-hearth operations because pig iron yield from blast furnace operations has been reduced due to forced consumption of inferior quality coal obtained in open market.

Philadelphia — Trading in steel scrap continues on a hand-to-mouth basis, with no change in the leading open-hearth grades, except in No. 2 bundles, which are a shade easier at $18-$18.50. Machine shop turnings are slightly stronger at $16. Cast scrap prices are unchanged except for a reduction in malleable to a flat $38.

Buffalo—Prices remained on a nominal basis and business was at a standstill in the scrap market last week as all interests awaited a break in the coal situation. Uncertainty is evident over the underlying market tone. The manner in which the ingot rate is holding is a stabilizing factor; also on the supporting side is the fact that dealers still have unfilled orders.

Cleveland—A firmer price tone developed in steelmaking scrap last week, due to sales at advanced prices outside the district. No new purchases were made here and Republic

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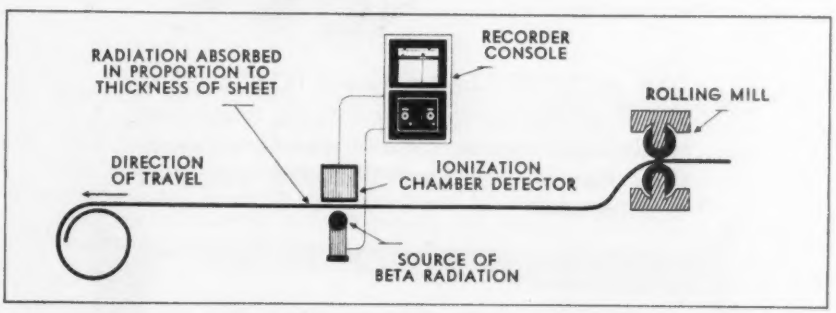

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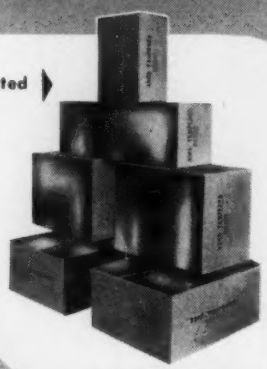

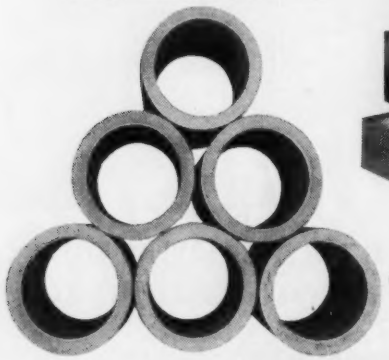

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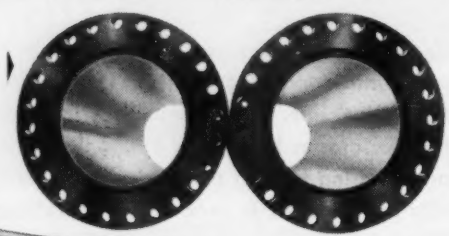

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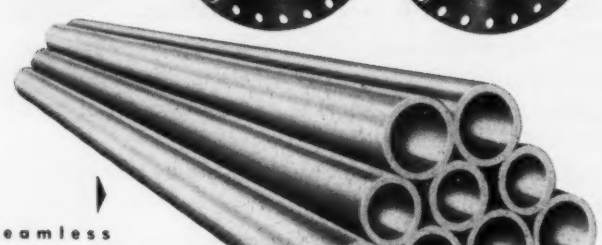

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Struthers Wells

Steel Corp. has curtailed shipments against orders already on the books. Dealer grade scrap prices remain soft. Some cast scrap is being purchased for use in open hearths, prices advancing to $41.50-$42 for No. 1 cupola, $38-$39 for charging box cast, $42-$43 for clean auto cast, and $36.50-$37 for No. 1 wheels.

Cincinnati—Scrap is coming out steadily and is absorbed on old commitments. New mill buying is dull. Some mills are refusing to enter the market. For the most part, dealers are moving material without hesitancy. Aggressiveness disappeared from bidding on railroad lists, indicating evaporation of recent strength. Quotations are unchanged.

Detroit—Scrap trading is the deadest it has been in years, with dealer and broker sentiment depressed. A ray of hope was seen in reports from Pittsburgh that planned shutdown of a number of blast furnaces had been rescinded, apparently in the belief coal mining would be resumed shortly. Ford is neither buying nor selling scrap at the moment, although prospects point to a plus position in view of high auto schedules. Foundry buying shows no life.

Chicago—Mills have reached the point in their fuel supplies where no additional amount of scrap can be used in substitution for hot metal. For that reason they are not entering into new scrap contracts. At least two mills are restricting their intake of material on order. One mill is contemplating no gradual curtailment of operations in hopes that sufficient coal will materialize before operations must stop; this mill is taking scrap freely against old orders. No. 2 bundles are up $1 on the basis of sales. Good cast material is still in demand above $40 and there is little slackening in demand because of foundry curtailments.

Birmingham—Scrap activity is at the lowest ebb it has been for several months. Weakness in price structure is indicated by quotations of $23 for heavy melting, and $22 for the No. 2 grade.

St. Louis—Shortages of pig iron outside this district last week sent up prices of railroad malleable scrap, while some other rail grades dropped a little. Short and random length scrap rails eased off $1 each, largely because the business of foundries, their principal users, continues extremely dull. Cast prices remain unchanged and nominal, which means, as one broker put it: "We'll listen to any offer." Two steel mills last week bought better than 20,000 tons of No. 2 melting steel, the first substantial mill order in many weeks. Price was $25, down about $3 from their last purchases. It represented about half the mills' monthly scrap consumption. Scrap dealers note no coal strike effect yet.

Los Angeles—Scrap remains quiet. Mill demand is in the doldrums. One steelmaker is buying 3000 tons of scrap monthly compared with 40,000 tons at the close of 1949. Local collections are down 2 to 25 per cent from last month.

San Francisco—Large amounts of scrap are piling up in dealers' yards, but mills show no tendency to buy

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freely. Purchasing usually is selective and only sufficient to keep stockpiles from dwindling too sharply.

Seattle—Scrap shipments are below normal due to reduced operations by mills and foundries. The former are buying only to cover current needs. Nos. 1 and 2 heavy melting are unchanged at $18. No. 1 cupola cast is slightly firmer at $27.50-$30. Dealers are well stocked.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 120

Cleveland—Ford Motor is lining up coke suppliers for the huge engine block foundry it is erecting in Parma, O. This plant will be ready for operation in October, 1951. Oven coke requirements will average 500 tons daily and may run as high as 800 tons.

It is not believed any one coke producer would care to take on such a large single commitment. Ford possibly may be forced to bring in some of its coke from the Detroit area. Also, the Ford requirements may necessitate some expansion of coking facilities.

Foundry coke demand has been stimulated by the coal strike. However, no frantic scramble for tonnage is in evidence. Oven operators are having coal supply difficulties, but are estimated to be holding sufficient stocks to support operations for a month or so.

Birmingham—An increase of $1 a ton on coke was announced here last week by Alabama By-Product Corp. Foundry activity, however, has tapered.

Rails, Cars . . .

Track Material Prices, Page 119

New York—Although steel sellers are not too enthusiastic over the outlook for car building, there is some improvement. Award of 4500 cars by the New York Central is the largest car contract placed in the East in some time. Meanwhile, buying of diesel-electric locomotives is sustained.

Warehouse . . .

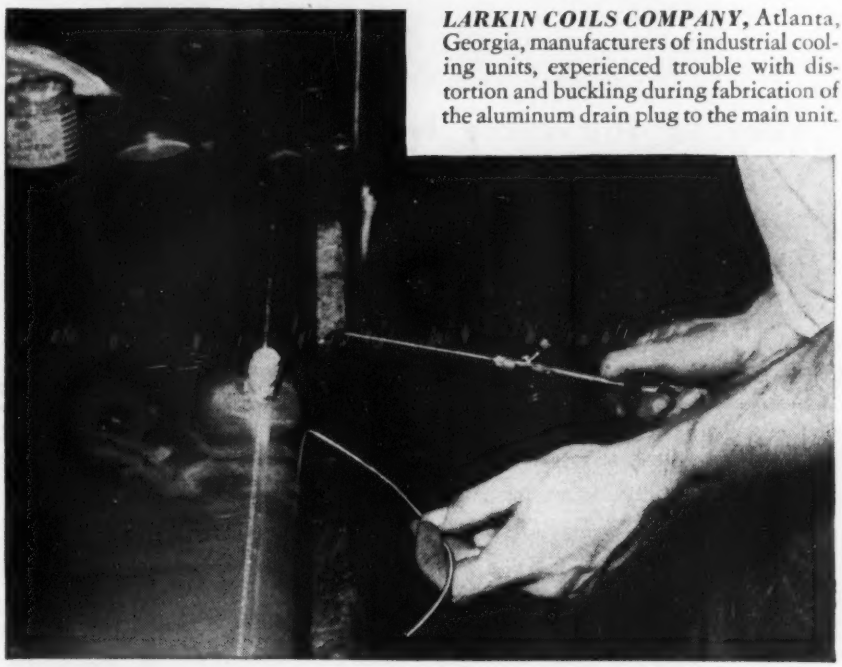
Warehouse Prices, Page 121

New York—Except for some carbon sheet classifications, warehouses are not pressed to meet current demand. Cold-rolled sheets are tight and inquiry indicates some of the larger consumers are short of tonnage. Heavier gages in hot-rolled are not as active. Foreign steel is a mounting factor in competition for bar shapes, structurals and nails. Close to 400 tons of the latter have been offered and some sold at $18 to $19 under domestic prices.

Pittsburgh—Average daily shipments from distributors' stocks continue to gain. Improvement is not consistent among all industrial consumers. A decline in shipments to an important group, such as coal mine operators, is offset by increased requirements from other sources. There has been some protective buying. Bulk of demand represents actual needs.

Philadelphia—Warehouse business on a daily basis is better than in January, which in turn was better than December. Distributors ascribe the further improvement as seasonal

Aluminum Brazing "ups" production 50%...buckling and distortion eliminated



LARKIN COILS COMPANY, Atlanta, Georgia, manufacturers of industrial cooling units, experienced trouble with distortion and buckling during fabrication of the aluminum drain plug to the main unit.

J. P. Flood and R. P. McCleskey, Airco Technical Sales Representatives, recommended aluminum brazing the drain plug to the unit, using Airco No. 716 Aluminum Brazing Wire and Elite Brazing Flux.

The company followed this suggestion, and found that the speed of the brazing technique increased production over 50%. More important, distortion and buckling was completely overcome — finished welds were excellent, rejects virtually eliminated, and savings were effected in gas and filler wire consumption. The company was extremely pleased with these results.

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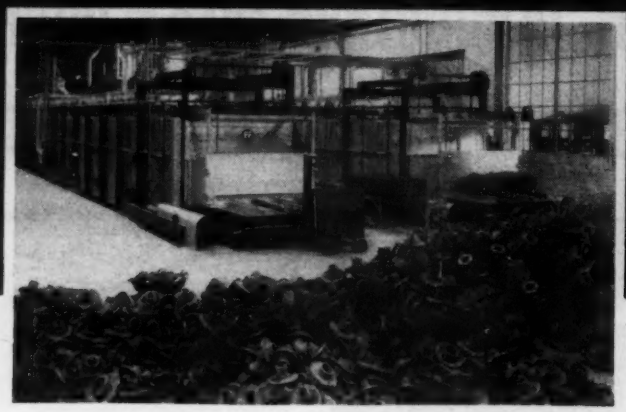
EF MALLEABLE FURNACES



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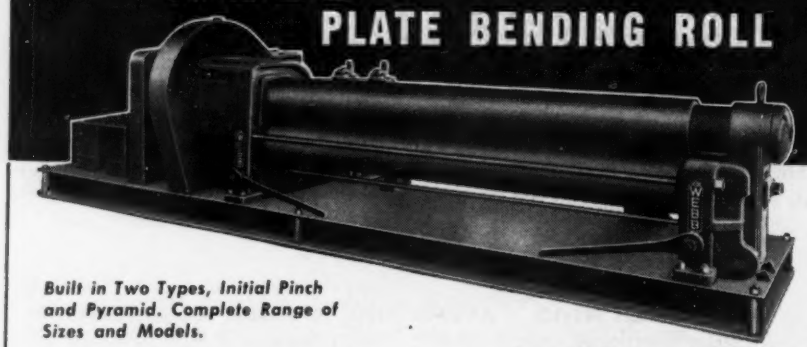

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and claim little seems to be due to the coal situation, except in sheets.

Cleveland—Except for sheets and strip, warehouse stocks are in good balance. Demand is pressing in the flat-rolled products and tonnage is moving from distributors' floors almost as quickly as received from the mills. Galvanized material is especially tight. Bars, plates and shapes are readily available. In general, volume is satisfactory but warehouses find demand adversely affected by the fact many metalworking shops in the area are operating on short-time.

Cincinnati—Sales of steel from warehouses continue steady and in good volume. Distributors find no upturn in demand which might be reflection of desire to bolster inventories against effects of coal miners' strike. Greatest pinch is in sheets.

Chicago—Good but not extreme business activity is reported by warehousemen. Sales effort is required to move all but the flat-rolled products. Customers are not clamoring for other steel products as they did early last year and there is apparently not too much buying stemming from the definite threat to steelmaking operations. If the coal strike lasts long enough to reduce mill operations materially, many warehousemen believe they will not be able to keep most consumers going for long because of the almost complete lack of flat-rolled material in reserve. Adequate bar and shape stocks will not get many metalworking companies over the hump if mill shipments are seriously hit.

San Francisco—Activity by distributors isn't showing much pickup. Sheets are in demand and supplies are tight. Ample inventories of almost all other products are reported by warehousemen.

Seattle—Wholesalers are optimistic, but full volume will not be attained until sawmills, logging camps and outdoor construction work is resumed on full scale following two months of idleness due to unfavorable weather. Cold-rolled and galvanized sheets continue in short supply; deliveries of stainless sheet items are slow.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3500 tons, 860 Lake Shore Dr. apartment buildings, to American Bridge Co., Pittsburgh.

1950 tons, Concord Village housing development, Brooklyn, through Paul Tishman, general contractor, to Lehigh Structural Steel Co., Bethlehem, Pa.

1500 tons, power house extension, New York Gas & Electric Co., Johnson City, N. Y., to American Bridge Co., Pittsburgh.

1250 tons, state bridge, Schuylkill county, Pennsylvania, to Bethlehem Steel Co.

1250 tons, grade separation, Chicago & Northwestern Railroad, Chicago, to American Bridge Co.; Arcole Midwest Corp., Chicago, contractor.

450 tons, Hunts Point Sewage Treatment Works, Department of Public Works, Bronx, New York, to Grand Iron Works Inc., that city.

350 tons, warehouse addition, Edgcomb Steel Co., Philadelphia, to Bethlehem Steel Co.

235 tons, hospital addition, Williamsport, Pa., to Bethlehem Steel Co.

200 tons, Matanuska bridge, Alaska, to Gilmore Steel Co., San Francisco.

200 tons, Lafayette school, Seattle, Mile city substation and miscellaneous jobs, to

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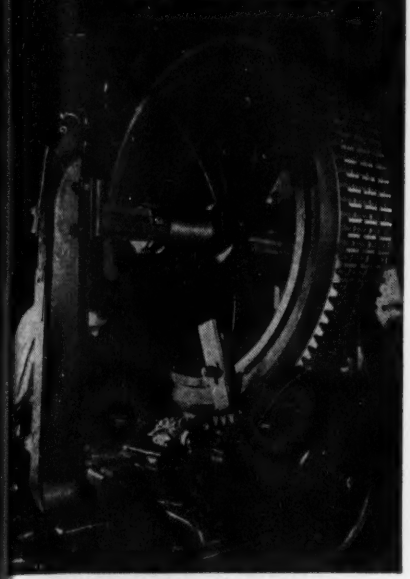
LARGE CUT GEARS



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145 tons, municipal bridge, Taber avenue, Philadelphia, to Phoenix Bridge Co., Phoenixville, Pa., through Kaufman Construction Co., Philadelphia.

100 tons, Myrtle Creek Oregon state bridge, to Poole, McGonigle & Dick, Portland, Oreg., low $154,182.

STRUCTURAL STEEL PENDING

12,000 tons, two barracks, hospital and other military installations, Ladd Field, Alaska; reported that Army engineers have revised designs to provide for reinforced concrete construction.

7000 tons, state bridge work, Corning, N. Y.; bids Mar. 29.

1375 tons, state hospital, Middletown, N. Y., noted recently as pending, general contract awarded to P. J. Carlin, 101 Park Ave., New York.

430 tons, Memorial Hospital, York and 68th streets, Manhattan, New York; Vermilya-Brown, that city, awarded the general contract.

400 tons, Washington state Metaline Falls bridge; bids opened at Olympia, Feb. 14.

208 tons, state bridge, Luzerne county, Pennsylvania; bids March 3.

175 tons, addition, YMCA building, Bethlehem, Pa.; bids to be closed this week.

130 tons, Cedar river bridge, King county, Washington; bids received by county commissioners, Seattle, Feb, 20.

118 tons, state bridge, Borough of Fairlawn, Bergen county, New Jersey; bids Mar. 2.

Unstated, four assemblies outlet gates, Detroit dam, Oregon; Guy F. Atkinson Co., San Francisco, apparently low $356,938.

REINFORCING BARS . . .

REINFORCING BARS PLACED

250 tons, state bridges and highway, Mid-Cape highway, Barnstable-Sandwich, Mass., to Truscon Steel Co., Boston, through Campenella & Cardi Construction Co., Hillsgrove, R. I., general contractor.

REINFORCING BARS PENDING

1210 tons, Snoqualmie Pass snowsheds, Washington state highway project; bids to Olympia, Feb. 28.

360 tons, store, Chicago, Goldblatt Bros. Inc.; bids asked.

325 tons, new plant, Gary, Ind. Budd Co.; bids asked.

180 tons, Cadillac sales and service building, Evanston, Ill.; bids asked.

175 tons, mercantile building, Cleveland; bids asked.

165 tons, Washington state Metaline Falls bridge; bids opened at Olympia, Feb. 14.

130 tons, also 17 tons shapes and 4952 lin ft steel piling, Boise river bridge, Idaho state highway project; bids to Boise, Feb. 23.

115 tons, diesel service building, Bensonville, Ill., the Milwaukee Road; bids asked.

PIPE . . .

CAST IRON PIPE PENDING

116 tons, University of Washington, Seattle, 10 in. and smaller, system extension; Thorburn & Logozo, Seattle, low $37,085.

100 tons, 16 and 12 inch, bids in at Kennewick, Wash.; Hugh G. Purcell, Seattle, low for U. S. Pipe & Foundry Co., Burlington, N. J.

PLATES . . .

PLATES PLACED

100 tons or more, elevated water tank, Metropolitan Utilities district, Omaha, Nebr., to Chicago Bridge & Iron Co., Chicago.

100 tons or more, elevated steel water tank, 500,000-gallon capacity, Clarksville, Tex., to Chicago Bridge & Iron Co., Chicago, $73,850.

PLATES PENDING

100 tons or more, 10 integrated steel barges,

Stuart's ThredKuT

D. A. STUART'S THREDKUT straight, or in rich blend, provides fine finish on tough, stringy materials because its high sulphur content gives it excellent anti-weld characteristics.

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2735-37 South Troy Street, Chicago 23, Illinois

Inland Waterways Corp., St. Louis; St. Louis Shipbuilding & Steel Corp., low, $81,440 each.

100 tons or more, two elevated steel water storage tanks, 500,000-gallon capacity each; Marion, Ind.; bids Apr. 7, Board of Public Works.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Chicago & North Western, 61 diesel-electric locomotives, to cost about $10 million and including 7 for the Chicago, St. Paul, Minneapolis & Omaha, a subsidiary. For North Western, thirty 1500 hp freight engines and four 2250 hp freight units to Electro-Motive Division, General Motors Corp., LaGrange, Ill., five 1600 hp road switchers and two 1200 hp switchers to Fairbanks, Morse & Co., Chicago; three 1600 hp road switchers and ten 1000 hp switchers to American Locomotive Co., New York. For the Omaha road, six 1500 hp freight units and one 1600 hp road switcher to Fairbanks, Morse & Co.

Union Pacific, ten diesel-electric passenger locomotives, each made up of two units of 2250 hp each, and 25 terminal switchers, to Electro-Motive Division, General Motors Corp., LaGrange, Ill.

LOCOMOTIVES PENDING

Burlington Lines, 40 diesel-electric locomotives, to be purchased in 1950; list will include nine 2000-hp passenger, four 4000-hp passenger, four 1500-hp freight, three 4500-hp freight, and twenty 1200-hp switching locomotives.

RAILROAD CARS PLACED

New York Central, 4500 freight cars, 1500 fifty-five ton box cars and 1500 seventy ton gondolas going to Despatch Shops Inc., East Rochester, N. Y., New York Central subsidiary, and 1500 fifty-five ton box cars to Pullman-Standard Car Mfg. Co., Michigan City, Ind.

RAILROAD CARS PENDING

Chicago, Burlington & Quincy, 250 to 2500 50-ton box cars and 600 70-ton hopper cars; bids asked.

FERROALLOYS

(*Continued from Page* 121)

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Contract, c.l., SMxD, bulk, 22.0c per lb of contained Cr, c.l., packed 22.9c, ton 24.25c, less ton 26.0c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.03% C 31.85c per lb of contained Cr, 0.04% C 29.75c, 0.06% C 28.75c, 0.10% C 28.25c-28.5c, 0.15% C 28.0c, 0.20% C 27.75c, 0.50% C 27.5c, 1% C 27.25c, 1.50% C 27.1c, 2% C 27.0c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, C 0.75-1.25% max.). Contract, carload, lump, bulk 27.75c per lb of contained chromium, carload, packed 28.85c, ton lots 30.05c, less ton 31.85c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. And 5c for each 0.25% of N above 0.75%.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 20.50c per lb of contained chromium plus 11.30c per pound of contained silicon; 1" x down, bulk, 20.65c per pound of contained chromium plus 11.50c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract, carload, 1" x D; packed, max 0.50% C grade, $1.03 per lb of contained chromium, ton lot $1.05, less ton $1.07. Delivered. Spot, add 5c.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 17.00c per lb of contained Si; packed 18.40c; ton lot 19.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 11.3c per lb of contained Si, carload packed 12.9c, ton lot 14.35c less ton 16c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per lb of contained Si, carload packed 14.8c, ton lot 15.95c, less ton 17.2c. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk, 14.65-15.00c per lb of contained Si, carload packed 15.9c, ton lot 16.9c, less ton 18.05c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 16.5c per lb of contained Si, carload packed 17.7c, ton lot 18.65c, less ton 19.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max Fe). C.l. lump, bulk, regular 19.0c per lb of Si, c.l. packed 20.2c, ton lot 21.1c, less ton 22.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 7.65c per lb of alloy, ton lots packed 9.05c, 200 to 1999 lb 9.40c, smaller lots 9.90c. Delivered. Spot up 0.5c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3¼ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 13.75c per lb of briquet, carload packed 14.45c, ton lot 15.25c, less ton 16.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.45c per lb of briquet, c.l. packaged 11.25c, ton lot 12.05c, less ton 12.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.30c, per lb of briquet, c.l. packaged 11.1c, ton lot 11.9c, less ton 12.8c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.15c per lb of briquet, c.l. packed 6.95c, ton lot 7.75c, less ton 8.65c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.30c, c.l. packed 7.10c, ton lots 7.90c, less ton 8.80c. Delivered. Add 0.25c for notching small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) 95.00c per pound of Mo contained. F.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%.) Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c, less ton 22.55c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.8c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.) Contract, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.28, less ton $1.35, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $160 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 3-4.5%.) Contract, $175 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

Vanadium Alloys

Ferrovanadium: Open-Hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.) Contract, any quantity, $2.90 per lb of contained

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Vanadium Oxide: Contract, less carload lots, $1.20 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Tungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $2.25 per lb of contained W; 2000 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

Zirconium Alloys

12-15% Zirconium Alloys: (Zr 12-15%, Si 39-42%, Fe 40-45%, C 0.20% max.). Contract, c.l., lump, bulk 6.6c per lb of alloy, c.l. packed 7.35c, ton lot 8.1c, less ton 8.95c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $4.25 per lb contained B, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 0.90 to 1.15%). Net ton to carload, 8c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Mn 5% max., Si 8% max., C 0.5% max.). Contract, ton lots, 2" x D, $2.90 per lb of contained Cb. Less ton $2.95. Delivered. Spot, add 25c.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%, Zr 0.75-1.25%, C 3.50-5%). Carload, 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 43c per lb of alloy, ton lots 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, 1" x 12 M, 16.5c per lb of alloy, ton lots 17.50c, less ton 18.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.00c per lb of alloy; ton lots 18.00c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-3 Foundry Alloy: Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Manal: (Approx. 20% each Si, Mn, Al). Lump, bulk, carload 11.00c. Ton lots, bulk 11.50c, packed 11.75c. Less ton lots, packed 12.25c per lb of alloy, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); Gross tons per carload, f.o.b. seller's works, Mt. Pleasant, or Anglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., furnace, any quantity $1.13.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., packed in bags containing 20 lb of molybdenum, 95.00c.

20 rough flywheel castings (3200 lbs.) are palletized at the foundry and shipped as a unit. Four Gerrard Steel Straps hold each load securely. Photo courtesy of International Harvester Co., Industrial Power Division.

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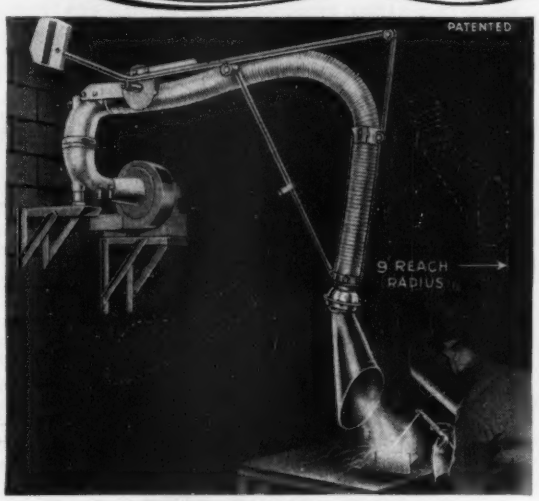

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Metalworking Briefs

CONSTRUCTION, ENTERPRISE
ORGANIZATIONAL CHANGES

International Harvester Co., Chicago, will let contracts soon for a $6 million building project in the Fairfax industrial district, Kansas City, Kan. The new facilities will house a parts depot, a machine transfer center and general sales offices.

Manganese production on a large scale is scheduled to begin this year near Henderson, Nev., in the Las Vegas area. **Manganese Inc.** plans construction of a $750,000 plant at the Three Kids manganese property, and **Combined Metals Reduction Co.** says it will soon build a concentrator to recover manganese from ore deposits in its Pioche lead-silver-zinc mines. U. S. Bureau of Mines thinks there are 5 million tons of ore averaging 18 to 25 per cent manganese in the Three Kids mine. It was purchased from the state of Nevada which had acquired it from War Assets Administration early in 1949.

A business name was filed in Erie county clerk's office for **Snyder Metal Products,** Buffalo, by Thomas J. McKay.

Fairbanks, Morse & Co., Chicago, plans a $6 million plant in the greater Kansas City, Kan., district for manufacture of household and industrial weighing equipment.

State Metals & Steel Co. Inc. bought DuPont's sulphuric acid plant on Allen avenue, Canton, O. The property may be used in connection with the new owner's present business of supplying ferrous and nonferrous metals and alloys.

Chicago Pneumatic Tool Co. will transfer all of its Detroit manufacturing operations to its new plant in Utica, N. Y., beginning May 1. The new Utica plant now has almost 1000 employees at work. The company expects to employ 2000.

Westinghouse Electric Corp.'s Sunnyvale, Calif., plant started work on a $200,000 order for electrical switchgear apparatus to be supplied to Pacific Gas & Electric Co. Equipment consists of a new type of drawout air circuit breakers to be used to control all 480-volt powerhouse auxiliaries at the new Contra Costa generating plant near Antioch, Calif.

Hartford Special Machinery Co., Hartford, Conn., appointed three new representatives: Woodall Engineering & Sales Co., Dayton, O., to cover southern Ohio; McBeth Machinery Co., Pittsburgh, to cover western Pennsylvania; and Garco Machinery Co., Cleveland, to cover northeastern Ohio. The firms will handle Hartford's line of automatic drilling and tapping machines, thread rolling and die polishing machines.

Lyon Industries Inc. was formed by Stuart G. Lyon, former president of Lymo Industries Inc., Chicago, and by Worthington Pump & Machinery Co. Contracts have been concluded between Lyon Industries and Worthington for the latter to manufacture at its Holyoke, Mass., plant the Lion 1400-cup vender, which will be known as the Lyon vender. Worthington will continue manufacture of its present line of Stewart 500-cup venders.

Gordon R. Walker, vice president of Walker Mfg. Co., Racine, Wis., personally bought the forging division of Harvey Mfg. Co., Racine.

Provisional cabinet of British Columbia approved proposed plans of **British Columbia Power Co.** to construct $6 million hydroelectric plant at the head of Salmon Arm and a 24-mile transmission line to Sechelt.

Ternstedt Division, General Motors Corp., is building a $2.5 million addition to its present plant on Georgesville road, Columbus, O.

Whiton Machine Co., New London, Conn. — steam turbines — appointed W. E. Pearson Co., as its Seattle representative for Washington. Whiton also named T. C. Chown Ltd., Montreal, Que., representative for Canada. Both appointees are qualified to act as consultants on steam turbine problems.

American Hardware Corp., New Britain, Conn., is suspending operations at its Corbin Screw Division and will close the plant that employs 773 persons. Charles B. Parsons, president, says some of the

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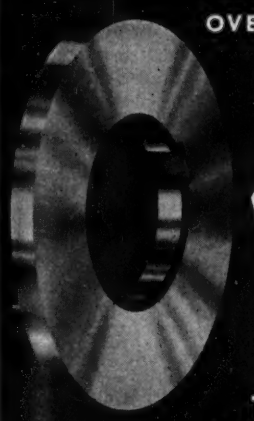

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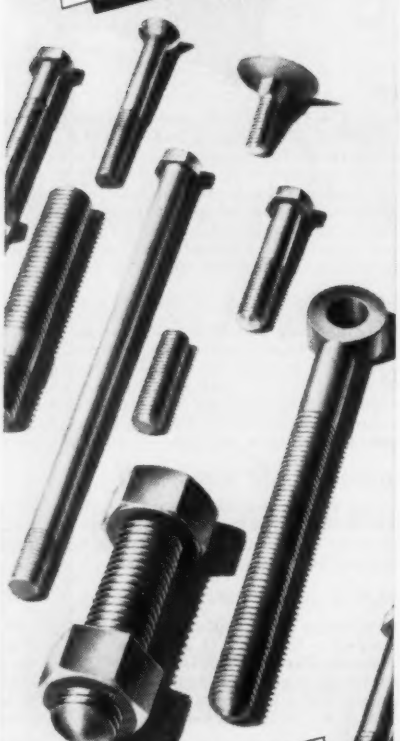

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employees will be absorbed in other operations of the company. He said the corporation "can no longer stand the financial burden and excessive operating losses" of the subsidiary. "This condition arises," he said, "mainly from the fact that the total producing capacity of all companies in the wood and machine screw industry is about twice as great as the demand for its products."

Nelson Stud Welding Division of Morton Gregory Corp., Lorain, O., is issuing franchises for the rental, sale and service of stud welding equipment to established welding equipment dealers under a new policy. Already 25 dealers, all of whom have stud welding guns available for rental by day, week or month, and for outright purchase, have been issued franchises.

Automatic Transportation Co., Chicago — electric industrial trucks — named P. W. Voss & Associates, Chicago, to succeed Lindsley & Voss. Voss will handle Automatic's Skylift and Transporter lines of materials handling trucks.

Universal Steel Strapping Co., iron and other metals, was chartered by the Secretary of State's office, Dover, Del. Capital of the firm is listed at $700,000. United States Corp. Co., Dover, is serving as the principal office.

Bridgeport Brass Co., Bridgeport, Conn., moved its warehouse facilities from Newark to a new and larger location at Hillside, N. J. N. H. Mosher is district manager.

Electric Products Co., Cleveland, appointed J. J. Costello Co. representative in the New England states. Costello has offices in Boston, Mass., and New Haven, Conn. Electric Products makes battery chargers, electrolytic motor generators, general purpose motor generators, frequency changers, etc.

Briggs-Weaver Machinery Co., Houston, was appointed a distributor of the Republic Rubber Division of Lee Rubber & Tire Corp., Youngstown. Briggs-Weaver will carry the complete stocks of Republic industrial rubber products: belting, hose and packing.

Mark Steel Corp. was chartered through J. Eugene Farber, attorney, 840 Spitzer Bldg., Toledo, O., to deal in steel and other metals. Attorney Louis A. Schrader and Maureen O'Connor are named incorporators with Mr. Farber.

Los Angeles County Board of Supervisors is completing plans for a $4.5 million communicable diseases hospital, and a $500,000 nurses home, adjoining the County General Hospital. Structures are to be completed by July, 1952. Adrian Wilson and Paul R. Williams, Los Angeles, are the architects.

International Merit Products Corp. discontinued its phonograph and parts business. The company sold its inventory of Meritone phonograph needles to the recently formed American Laubscher Corp., New York, and transferred all interests as representative of Laubscher Bros. & Co. Ltd., Taeuffelen, Switzerland.

University of Michigan is contemplating construction of a $10 million women's athletic plant in Ann Arbor, Mich.

Bedford Tool & Forge Co., Bedford, O.—hand and pneumatic chisels—appointed H. J. Bannister, Philadelphia; Acme Tool Mfg. Co., Belleville, N. J.; and A. C. Schwartz, Cleveland Heights, O., as representatives.

Carroll & Sons Inc., machinery, filed a charter of incorporation with the Delaware Secretary of State's office. Capital of the firm is listed at $100,000. Arley B. Magee Inc. is serving as the resident agent in Dover, Del.

Badger Foundry Co., Racine, Wis., organized 40 years ago, has gone out of business. The company had a maximum employment of 160. When operations at the plant ceased in July, 1949, because of a strike, about 70 were employed.

American Industrial Co., Buffalo, expects to start construction of a $600,000 newsprint mill in Hubbard, O., this spring. Newsprint Corp. of America, an affiliated company, will operate the plant, to be geared to produce 150 tons a day.

Toledo Steel Scaffold Inc., Toledo, O., was chartered by Mark Winchester to manufacture and deal in scaffolding and other equipment.

Geneva Steel Co., Geneva, Utah, established new production records in three of its departments in January: Open-hearth production was 123,975 net tons on ingots, about 6000 tons greater than the previous record in March, 1949; the plate mill rolled 108,854 net tons, well above the December, 1949, peak of 75,370 tons; and the slab mill output rose to 106,609 tons, compared with the previous record of 105,226 tons in March, 1949.

Dietrich Bros. Inc., Baltimore, structural fabricator, will begin construction shortly on a two and a half-story office building, 108 x 123 feet. It's the first step in a general improvement program.

Ampco Metal Inc., Milwaukee, appointed 14 concerns as exclusive stocking distributors for Ampco centrifugal pumps in their respective areas. They are: Walter H. Eagen Co. Inc., Philadelphia; Kerr Machinery Co., Detroit; Pump Engineering Co., Los Angeles; Jackson Engineering Co., Indianapolis; Diehl Pump & Supply Co., Louisville; Ramsay Pump & Supply Co., Pittsburgh; Westco Pump Sales Co., San Francisco; Truscott Co., Portland, Oreg.; Southern Engine and Pump Co., Houston; McLellan A-C Supply Co., New Orleans; J. J. Heinrikson & Son, Kansas City, Mo.; Connecticut Pump Co., North Haven, Conn.; Chase Pump & Equipment Co., Providence, R. I.; and Ryan Hydraulic Specialties Co., Phoenix, Ariz.

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